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MTMC REPORT OA 78-7b-8

ANALYSIS OF MTMC PARTICIPATION IN THE REFORGER 79 EXERCISE

MAY 1979

MILITARY TRAFFIC MANAGEMENT COMMAND
TRANSPORTATION ENGINEERING AGENCY
NEWPORT NEWS, VIRGINIA 23606

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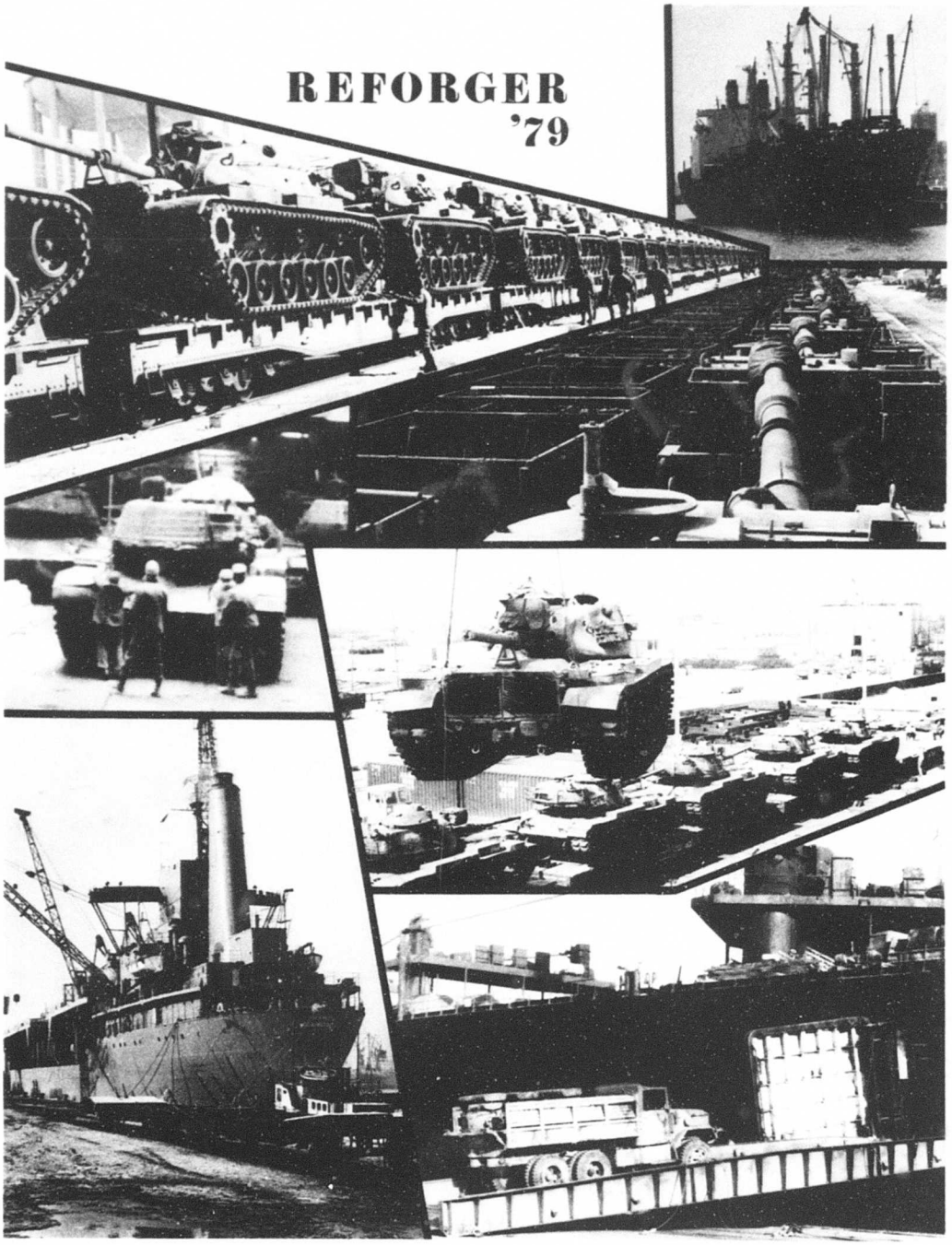
REFORGER
'79

DEPARTMENT OF THE ARMY
HEADQUARTERS
MILITARY TRAFFIC MANAGEMENT COMMAND
WASHINGTON, D.C. 20315

REPLY TO
ATTENTION OF:

MT-C

17 MAY 1979

SUBJECT: Report on Analysis of Military Traffic Management Command (MTMC) Participation in the REFORGER '79 Exercise

THRU: HQDA (DACS-ZB)
WASH DC 20310

TO: HQDA (DACS-ZA)
WASH DC 20310

1. The inclosed report is designed to analyze MTMC efforts in support of the Return of Forces to Germany (REFORGER) '79 exercise. This was the fourth REFORGER exercise, starting with REFORGER '76, in which the surface transportation system was used to ship equipment of elements of major US Army units to Europe and return.

2. Of particular note during this REFORGER were severe winter weather challenges presented to all concerned during both deployment and redeployment. This was the first REFORGER exercise involving sealift conducted under such conditions, and it provided valuable experiences which should benefit planning for a winter contingency operation. Additional challenges resulting from late vessel changes forced significant load planning and ship schedule adjustments. Despite these handicaps, all aspects of the equipment deployment and redeployment were conducted with the same professionalism shown in past exercises.

3. The true worth of REFORGER '79 rests in the training realized by all participants. All of the participating units, transportation agencies, and support personnel gained valuable experience that will serve them well in future exercises or in the event of contingency operations.

4. This report has been provided to all agencies that participated in this exercise and to others with a professional interest. It is my hope that the findings and recommendations will be of value in future strategic mobility planning.

H. R. DEL MAR
Major General, USA
Commanding

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as

AD

MTMC REPORT OA 78-7b-8

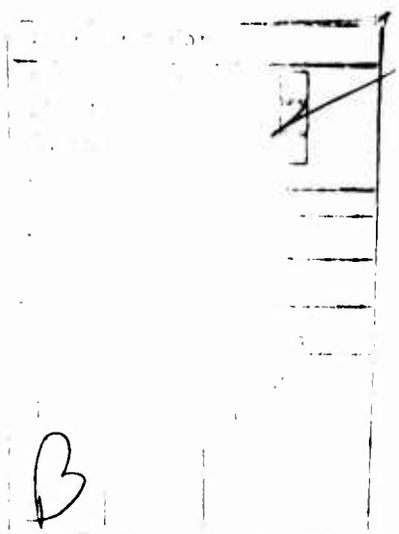
ANALYSIS OF MTMC PARTICIPATION IN THE REFORGER 79 EXERCISE

May 1979

Project Coordinator
Gary R. Bill, LTC, TC, USA

Project Officers

John T. Eanes, MAJ, TC, USA
Max W. Nicely, CPT, TC, USA
Michael S. Lach, CPT, TC, USA
Dwain C. Denniston, CPT, TC, USA



MILITARY TRAFFIC MANAGEMENT COMMAND
TRANSPORTATION ENGINEERING AGENCY
Newport News, Virginia 23606

ABSTRACT

This analysis documents MTMC participation in the REFORGER 79 exercise. It evaluates MTMC planning for and execution of its role in the surface deployment and redeployment of the military equipment of major elements of the 1st Infantry Division (Mech) and the 1st Cavalry Division, with supporting units to Europe and return to home station. Subject areas covered include: pre-exercise staffing planning; shipload and prestow planning; unit port call and installation outloading, to include pre-exercise rail outloading training; CONUS line-haul operations; CONUS SPOE and SPOD operations; European SPOD and SPOE operations; cargo documentation procedures; and conclusions and recommendations. As in previous REFORGER exercises, REFORGER 79 demonstrated that the United States surface transportation system is capable of supporting major military unit deployments.

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EXECUTIVE SUMMARY

1. Objective. To analyze MTMC participation in the REFORGER 79 exercise.

2. Scope. This analysis is an evaluation of the MTMC role in the surface deployment of REFORGER 79 unit equipment to Europe and its return to home station. Detailed discussions of those elements of the surface transportation system over which MTMC exercises supervision are included. Covered are subjects such as pre-exercise staff planning, rail outloading training, rail outloading, highway convoys, rail and port operations, and ship loading. Cargo documentation procedures are given special attention in this report.

3. Background. REFORGER 79 was the fourth in a series of REFORGER exercises that included the surface transportation of significant amounts of military cargo to Europe and return. It was the first of that series, however, to be conducted in the winter, when weather significantly affected both CONUS and European operations.

4. Conclusions. Exact planning and professional execution by all participants, from deploying units to commercial operators and military transporters, were responsible for the success of this REFORGER deployment. While not without its challenges, REFORGER 79 again proved that lessons learned during previous exercises were invaluable in avoiding past mistakes and insuring the success of future operations. The training realized as a result of REFORGER 79 added immeasurably to the pool of strategic mobility expertise of the DOD. This indicates that, during REFORGER 79, MTMC again performed in a most professional manner.

5. Summarized recommendations. It is recommended that:

a. Hazardous and sensitive cargo be afforded the care, segregation, special handling, and documentation that it demands and that deploying units be advised of the seriousness of not complying with these requirements.

b. Shipping units comply with coordinated call-forward requirements to insure that cargo arrives at the POE in the sequence required for further outloading. Failure to follow call-forward procedures hampers POE operations and could result in cargo not being accommodated.

c. Equipment stowed in vehicle cargo beds be secured to preclude personal injury or equipment damage. Failure to properly secure equipment in VEHCAR space compounds loading problems at POE and often results in rejection of railcar loads by rail inspectors.

SECTION I

INTRODUCTION

1. Subject. Analysis of MTMC participation in the REFORGER 79 exercise.

2. Objective. To analyze MTMC participation in REFORGER 79 and to improve transportation procedures and services in support of deploying units.

3. Scope. This analysis is limited to the deployment and redeployment of the equipment of the 2d Brigade, 1st Cavalry Division, selected elements of the 1st Infantry Division, and miscellaneous supporting units for which MTMC had transportation planning and/or support responsibilities. Those REFORGER 79 operations that were not the responsibility of MTMC were evaluated to the extent necessary to identify transportation problems within the cognizance of MTMC. Specifically, with reference to REFORGER 79, the Commander, MTMC, was responsible for:

a. Providing transportation planning support to the Office, Joint Chiefs of Staff (OJCS), the unified and specified commands, and the military services.

b. Providing traffic management support for the movement of equipment and personnel within CONUS.

c. Arranging for the utilization of commercial ocean terminals within CONUS.

d. Controlling and coordinating the movement of equipment into and out of CONUS water terminals.

e. Supervising both deployment and redeployment in CONUS water terminal operations, consisting of equipment receipt, segregation, staging, and loading.

f. Providing technical liaison and assistance to the appropriate host-nation authorities in unloading equipment and in associated handling, staging, processing, accounting, and documenting functions in Europe.

g. Receiving, staging, and loading cargo at European ports during redeployment.

4. Study parameters. The following phases of REFORGER 79 are keyed to one or more of the aforementioned responsibilities and are documented in this analysis:

a. Conceptual and operational planning

b. Shipload planning

c. REFORGER 79 cargo documentation

d. Unit deployment from CONUS

e. Cargo discharge at European ports

f. Redeployment port operations in Europe

g. Discharge in CONUS and return to home station

h. The effect of winter weather on transportation operations

5. Background. In October 1976, Commander in Chief US Army Europe (CINCUSAREUR), first outlined the concept of a winter rather than a fall REFORGER exercise. This was to provide training in European winter weather, using pre-positioned materiel configured to unit sets (POMCUS) equipment; also, it was to be a winter test of the lines of communication. A five-maneuver battalion brigade task force from the 1st Cavalry Division, elements of the 1st Infantry Division, the 34th Engineer Battalion, and other supporting units were designated to deploy by sea. (Later, the 34th Engineer Battalion was deleted from the troop list because its inclusion would have resulted in additional sealift requirements.) REFORGER 79 continued the concept of sea and air transport employed in REFORGER exercises since 1976. Use of European host-nation support agreements was again to be a vital element of operations.

SECTION II

REFORGER 79
PRE-EXERCISE STAFF PLANNING

1. Conceptual planning.

a. In October 1976, CINCUSAREUR first outlined the concept of conducting the 1979 REFORGER exercise during the winter rather than in the fall, as in previous years. A winter exercise would provide European winter-weather training for dual-based forces and would exercise POMCUS equipment under winter conditions. During the following year, plans for REFORGER 79 were developed by CINCUSAREUR, in coordination with Supreme Allied Commander Europe (SACEUR) and other oversea commanders. In October 1977, CINCUSAREUR provided Headquarters, Department of the Army (HQDA) an expanded and revised concept, with broad objectives, phasing, and an initial troop list.

b. In November 1977, US Commander in Chief Europe (USCINCEUR) refined his exercise plan by expanding his concepts to include a proposal to use NATO-country vessels to ship US equipment. In December 1977, Joint Chiefs of Staff (JCS) responded to USCINCEUR's proposal to use NATO shipping in REFORGER 79 by referencing the 1904 Cargo Preference Act, which authorizes the use of foreign-flag shipping to carry US military equipment only when there is insufficient US-flag shipping capability. The use of NATO shipping for sealift was, therefore, not approved.

c. MTMC received the REFORGER 79 warning order from CINCUSAREUR on 28 February 1978. This warning order confirmed that the use of NATO vessels to transport US equipment was not to be considered and noted that the troop list would not be changed "unless absolutely essential because of unforeseen circumstances." The major troop list units included the 1st Infantry Division (Mechanized) (-) and a brigade from the 1st Cavalry Division. Tasking for MTMC's Transportation Terminal Group Europe (TTGE) -- to discharge ships, to document port clearance for deploying and redeploying REFORGER equipment and cargo, and to provide necessary liaison to respective host-nation port authorities -- was included with the tasking of USAREUR's 4th Transportation Brigade. The warning order noted also that the final operations order would be published in June 1978.

d. Declassification guidance for the exercise was announced by CINCUSAREUR in February, with an effective date of 1 April 1978. Items such as aerial and water ports for deployment/redeployment of troops and equipment, as well as the designation of CONUS deploying units, were

declassified. CINCUSAREUR cautioned, however, that press releases would be authorized only by Assistant Secretary of Defense for Public Affairs.

e. In late February, CINCUSAREUR requested that FORSCOM forward vessel equipment lists NLT 21 March 1978. Requested data, by vessel type, included the number of:

(1) Convoyable wheeled vehicles

(2) Tracked vehicles

(3) Helicopters

(4) Trailers

(5) Outsize pieces of equipment

Commander, 1st Infantry Division was designated as Commander in Chief Army Readiness Command's (CINCARRED) action agent for REFORGER 79 by Commander, Forces Command (FORSCOM), and was requested to provide MTMC with equipment and cargo data for sea deployment of forces as soon as possible to meet CINCUSAREUR's 21 March 1978 suspense.

f. HQ MTMC, on 2 March 1978, advised the Military Sealift Command (MSC) that MTMC would conduct a preliminary shipload analysis and develop vessel equipment lists as soon as cargo and ship availability data became available. To accomplish this, MTMC requested that the vessels to be used be formally named. MSC replied that for planning purposes, the GTS Admiral William M. Callaghan (hereafter called GTS Callaghan) and the USNS Comet were assigned to REFORGER 79. MSC noted that ship assignments might change when cargo requirements were finalized.

(1) An initial REFORGER 79 planning conference, scheduled by CINCUSAREUR, was held at HQ USAREUR, Heidelburg, Germany, 2 through 8 April 1978. Since one of the major points of discussion would be reception operations at seaports and airports, the 21 March suspense for shipload information had to be met.

(2) HQ MTMC, in coordination with MTMC Transportation Engineering Agency (MTMCTEA) and HQ FORSCOM, established 15 March 1978 as the suspense date for receipt of equipment data. Upon receipt of these data, MTMCTEA was to conduct a shipload analysis for presentation at a 20 March 1978 coordination meeting at HQ MTMC. There, shiploads were to be finalized and the results of decisions dispatched by message to all concerned.

g. On 10 March 1978, the 1st Infantry Division provided MTMC a gross estimate of unit equipment for sea deployment in REFORGER 79. This gross listing totalled approximately 67,000 MTON of cargo, exceeding the planned shipping capacity (GTS Callaghan and USNS Comet) by some 31,000 MTON. Commander, FORSCOM, was immediately advised of this ship shortfall and was requested to establish the priorities for the major units scheduled for deployment. The order of priority was: 1st Infantry Division, 1st Cavalry Division, and the 34th Engineer Battalion.

HQDA was advised of the shipping shortfall and subsequently requested that MTMC inform MSC of the additional shipping requirements and obtain MSC's position on availability of additional sealift. Meanwhile, HQ FORSCOM directed the 1st Infantry Division to provide a detailed listing of equipment to MTMCTEA by the 15 March 1979 suspense date.

h. At HQ MTMC, on 20 March 1978, representatives from 1st Infantry Division, 1st Cavalry Division, and 13th COSCOM reviewed and discussed MTMCTEA's analysis of the detailed equipment listings. The analysis indicated that five vessels would be required to deploy listed equipment by sealift during REFORGER 79. The detailed cargo listing contained over 21,000 STON (64,449.1 MTON) of equipment. The two vessels previously identified by MSC (GTS Callaghan and USNS Comet) were load-planned first, and the remaining cargo was assigned to a third RORO and two Seatrain vessels as the tentative "best vessel mix." In view of the shortfall in available lift, USAREUR was requested to advise MTMC of any possible changes to units or equipment that would reduce the need for additional shipping. MSC was requested to advise MTMC on availability of three additional vessels required to deploy Army equipment.

i. By the end of March, MSC had advised that Navy funding for additional shipping, other than for the GTS Callaghan and USNS Comet, might not be available. USAREUR representatives, at the initial planning conference held in Heidelburg, Germany, 2 through 8 April 1978, stated that the cargo requirement remained valid. USAREUR stated that they were committed to employing a restructured brigade in Europe and that they strongly supported the five-ship requirement. USAREUR also noted that the shortfall would have to be resolved by the second planning conference, to be held 23 through 29 July 1978. MSC provided MTMC with an alternative ship mix based on availability of the ships, cost of utilization, and speed capability. The priority of the proposed ship mix was:

(1) Three MSC ROROs, two Challenger class C4 breakbulk (B/B).

(2) Three MSC ROROs, two Transcolorado class C4 heavy-lift B/B.

(3) Three MSC ROROs, two Pride Class C3 B/B (ex-Moore-McCormack) ships from Ready Reserve Fleet (RRF).

(4) Three MSC ROROs, any two B/B types from above mixes.

j. Discussions between MTMC and FORSCOM action officers after the preliminary analysis resulted in a revised FORSCOM-provided equipment list. Deleted from the 15 March 1979 list were: all helicopters, the 522 Military Intelligence Battalion, and the 34th Engineer Battalion. This information was passed to MTMCTEA on 22 May 1978 for use in analyzing the MSC-proposed alternative ship mixes. FORSCOM was further requested to review all cargo/unit equipment data previously provided and advise MTMC of any further changes. Toward this end, the 1st Infantry Division hosted an action-officer-level conference, 7 through 8 June 1978, at Fort Riley, Kansas. Subsequently, representatives from FORSCOM, 1st Infantry Division, III Corps, and 1st Cavalry Division attended a conference at HQ MTMC on 12 June 1978 to review the results of the 7 through 8 June 1978 conference. MTMCEA and MTMCTEA also attended. During this conference MTMCTEA representatives conducted a second shipload analysis based on the latest ARRED action-agent-provided equipment lists. Four vessels (three ROROs and one Seatrain) then became the MTMC-recommended ship mix for sea deployment. This revised equipment list totaled 19,350.8 STON (66,557.2 MTON). MSC was requested to advise MTMC as to the availability of an additional RORO and a Seatrain-type vessel for the the deployment. MTMC noted that the CONUS selection of port of embarkation (POE), planning for port operations, and timing of deployments depended upon finalization of the force list and determination of firm sealift composition. The information was required by USAREUR for its second planning conference in mid-July.

k. MTMCTEA, in a 16 June letter, requested that FORSCOM be asked to provide Computerized Movement Planning and Status System (COMPASS) printouts for future shipload analyses. MTMCTEA noted that the handwritten spreadsheet equipment lists used to date required at least 6 man-days to manipulate into usable format. A COMPASS printout of equipment/cargo is more accurate and readily usable. Another major advantage of COMPASS data is that it offers a base reference point for subsequent adjustments. HQ MTMC, in accordance with MTMCTEA's request, requested that FORSCOM provide a COMPASS listing for REFORGER 79 equipment as soon as possible.

l. MSC announced on 16 June that, for planning purposes, the GTS Callaghan, the USNS Meteor, the USNS Comet, and one Seatrain could be made available to meet the Army lift requirements for REFORGER 79. With the MSC announcement received and the Army force load-planned, MTMC formally tasked subordinate commands, on 21 June 1978, to prepare

for their roles in the forthcoming exercise. MTMC TTGE was responsible for supervising European vessel berthing by the host nations, equipment discharge and processing for onward movement during the deployment phase, and the reception, processing, and supervision of vessel loading for the redeployment. MTMCEA was designated MTMC's executive agent and REFORGER 79 exercise director for all CONUS surface transportation and port operations aspects of the deployment and redeployment of the REFORGER 79 units and associated equipment. MTMCTEA was tasked to provide the necessary technical assistance to MTMCEA and MTMC TTGE. After this preliminary planning was completed, the HQ MTMC primary staff point of contact for REFORGER 79 passed from the Directorate of Plans to the Directorate of International Traffic.

2. Operational planning.

a. The principal efforts during the operational planning phase of REFORGER 79 were directed at finalizing the type and amount of equipment to be deployed; selecting the optimum CONUS seaport of embarkation (SPOE) and debarkation (SPOD); determining the most cost-effective and efficient CONUS line-haul routes; designating the actual sealift composition; and coordinating with host nations on port operations in Europe. As in the past, significant changes, such as the replacement of the USNS Comet by the SS American Corsair and changes in type and quantity of unit equipment, did occur. These changes were accommodated, however, without significant impairment to the overall support provided.

b. During June and July, MTMC conducted an analysis of potential CONUS SPOEs/SPODs. As in the past, economic factors, facilities, available labor, and line-haul requirements were essential to the selection process. On 27 July 1978 MTMC announced to all commands concerned that the Beaumont-Port Arthur, Texas, port complex had been designated as the CONUS SPOE/SPOD to support REFORGER 79.

c. Throughout August and September, MTMC TTGE coordinated BENELUX reception planning with HQ USAREUR, 4th Transportation Brigade, 21st Support Command, the major deploying units, and representatives of the host nations. Plans called for the GTS Callaghan to discharge at Amsterdam, the Netherlands; and the USNS Comet, USNS Meteor, and SS Maine, at Antwerp, Belgium. The 4th Transportation Brigade established 20 August as the date for submitting an updated list of sea/air interface cargo and vessel listings of sea-deployed cargo.

d. While REFORGER 78 deployment operations were going on in mid-August, MTMC convened an action-officer-level coordination meeting

at Beaumont, Texas. Points of contact were established, anticipated REFORGER 79 port operations were discussed, and port support roles, functions, and responsibilities were outlined.

e. During September 1978, as equipment data and origin installations were identified, specific planning took place regarding CONUS line-haul movements. Since 90 percent of the equipment was to originate from Fort Hood, Texas, a distance of less than 300 miles from Beaumont, MTMC recommended that, as a cost-saving measure, wheeled vehicles move in military convoy from Fort Hood to Beaumont/Port Arthur. Nonconvoyable equipment from Fort Hood would move by rail, as would equipment from Fort Riley. The balance of the equipment, which originated at Fort Leonard Wood, Missouri; Fort Devens, Massachusetts; Fort Jackson, South Carolina; and Hunter Army Air Field, Georgia, would move by commercial highway means.

f. The REDCOM Planning Conference, held in October 1978, provided a forum for meaningful and timely discussions by representatives of major participants. Discussions at that conference included requirements for COMPASS listings, plans for CONUS surface movement, CONUS port operations target dates, proposed documentation procedures, lessons learned during REFORGER 78, European port operations, agricultural clearance requirements for redeployment from Europe, and sea/air interface cargo requirements.

g. On 28 November 1978, MSC advised that, due to required boiler repairs in Rotterdam, the Netherlands, the USNS Comet would be unable to meet the deployment schedule. On 30 November the MSC nominated the SS American Corsair to replace the USNS Comet. MTMC performed the necessary prestow and cargo adjustments to accommodate the change.

h. During early and mid-December, while unit equipment was moving to the ports, MTMC coordinated intensively with MSC on adjustments to the on-berth dates of each of the sealift vessels. Every effort was made to minimize expenditures of vessel per diem funds and to avoid the requirement for a large port operations support force to remain in Beaumont during the Christmas holiday period, awaiting completion of vessel-loading operations. The final coordinated schedule permitted loading of the USNS Meteor, SS American Corsair, and SS Maine by 22 December. The GTS Callaghan commenced loading on 27 December and completed on 30 December.

3. Summary. Conceptual and operational planning for REFORGER 79 was successful. Direct and detailed coordination by staffs of the respective

MTMC Exercise Directors with those of the major deploying units early in the planning phase, both in CONUS and Europe, contributed significantly to an exceptionally well coordinated operation. MTMC operational planning proved again to be thorough and sound. The execution of this planning in CONUS and Europe--despite late vessel changes, adjusted loading dates, and severe weather during the European discharge operations--demonstrated that MTMC is capable of responding to the strategic mobility challenge. As in prior REFORGER exercises, the single area that requires increased attention is the requirement for an early and accurate determination of units and equipment to be deployed.

SECTION III

SHIPLOAD AND PRESTOW PLANNING

1. General. MTMC sealift planning for REFORGER 79 included shipload analysis, a vessel survey, and prestow planning. Based on these actions, Military Sealift Command (MSC) nominated the GTS Admiral William M. Callaghan, the USNS Comet, the USNS Meteor, and the SS Maine (ex-Seatrain) as the most appropriate ships for the exercise. Later, the SS American Corsair was substituted for the USNS Comet during the deployment phase.

2. Ship description.

a. The characteristics of the ships used to transport REFORGER 79 equipment are presented in table 3-1. The ships are pictorially displayed in figures 3-1 through 3-5.

TABLE 3-1
VESSEL DESCRIPTIONS

Name	Type	Speed	Length	Cargo Capacity
SS American Corsair	Breakbulk	21 KT	561 FT	65,128 SQ FT 16,512 MTON
GTS Admiral William M. Callaghan	RORO	25 KT	694 FT	167,537 SQ FT 49,426 MTON
USNS Comet	RORO	18 KT	499 FT	86,478 SQ FT 17,096 MTON
USNS Meteor	RORO	20 KT	540 FT	99,270 SQ FT 24,334 MTON
SS Maine	Breakbulk/ Seatrain	16 KT	560 FT	67,997 SQ FT 20,037 MTON

b. The three nominated RORO ships, the GTS Callaghan, USNS Meteor, and USNS Comet have stern- and side-loading ramps, internal ramps for roll-on deck loading, and cargo hatches for lift-on, lift-off operations. The SS Maine was activated from the Ready Reserve Force (RRF) of the National Defense Reserve Fleet (NDRF) for REFORGER 79. It is a converted T2 tanker, now considered a breakbulk/Seatrain type of ship, specifically designed to transport vehicles and outsize cargo. It

Figure 3-1. SS American Corsair, breakbulk ship.

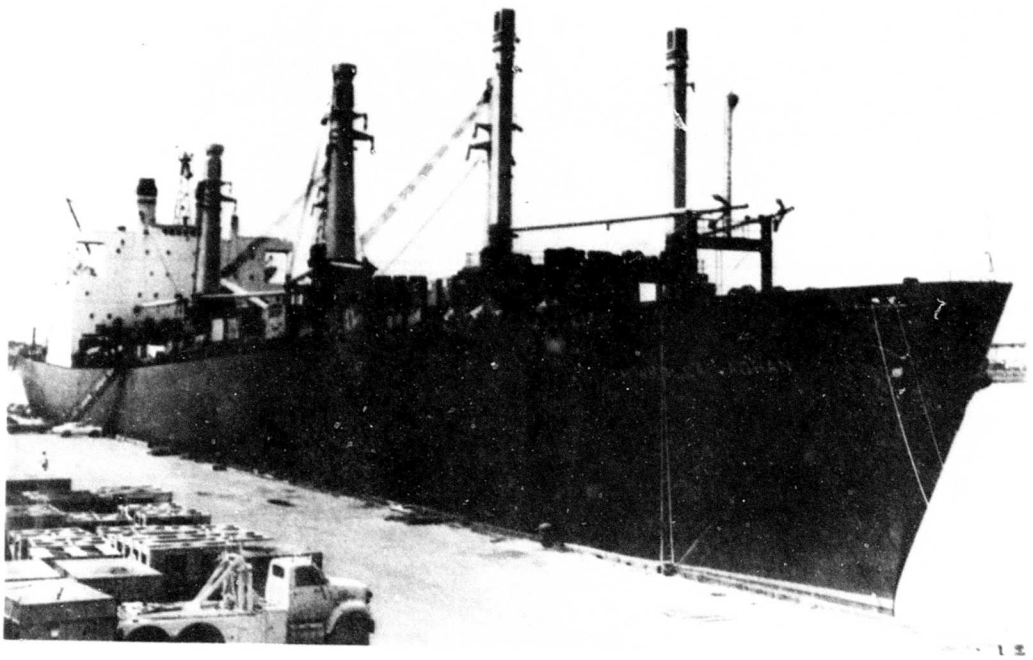


Figure 3-2. GTS Admiral William M. Callaghan, RORO ship.

has four decks, one large loading hatch, and two 45-LTON deck-mounted cranes. The SS American Corsair, a Challenger I class vessel and part of the MSC charter fleet, is a six-hatch breakbulk vessel.

3. Ship surveys. Since the three nominated RORO ships were familiar to MTMC planners, and precise ship diagrams were available for them, additional confirmation of ship details was not required. However, an onsite inspection of the SS Maine was conducted during her overhaul at

Figure 3-3. USNS Comet, RORO ship.

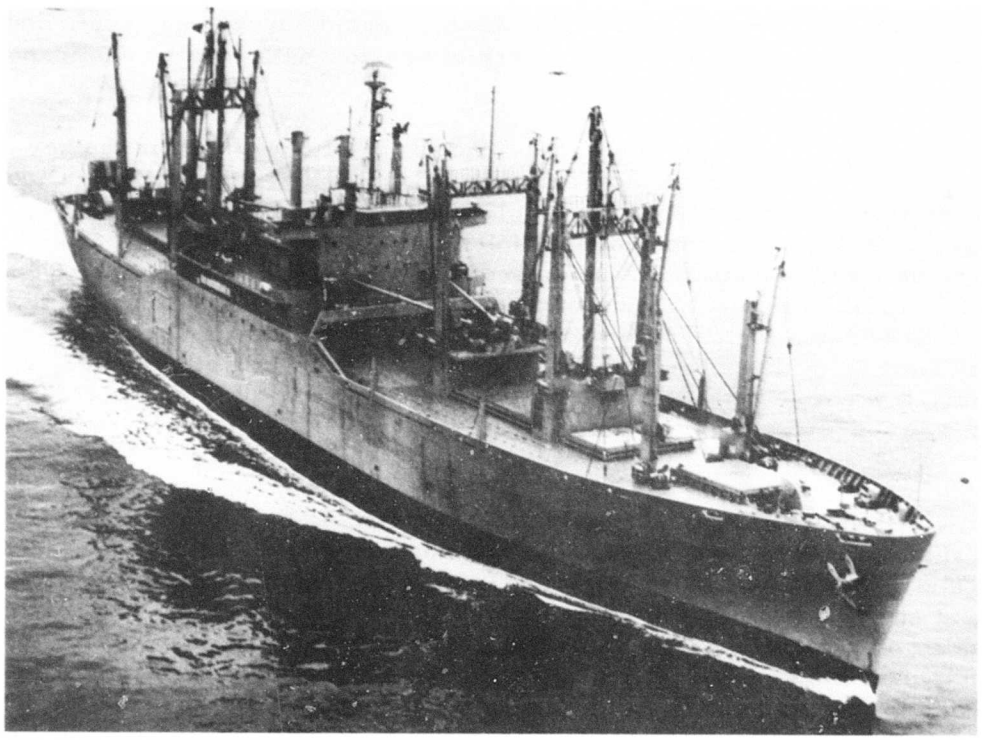


Figure 3-4. USNS Meteor, RORO ship.

Norfolk, Virginia. This review of her stowage space dimensions confirmed the accuracy of the diagrams available for this Puerto Rico class vessel. While the last minute substitution of the SS American Corsair, for the USNS Comet during deployment, did not permit a detailed survey of the SS American Corsair, MTMC planners and port operators were

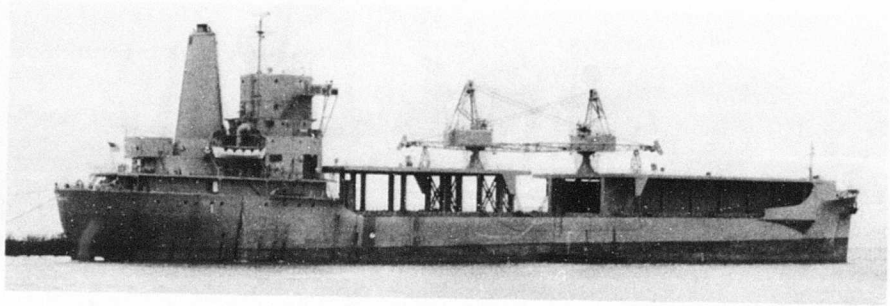


Figure 3-5. SS Maine, breakbulk/Seatrain ship.

familiar with her, and the available vessel diagrams proved sufficient for planning purposes. When time allows, vessel surveys and confirmation of ship diagrams permit load planners to prestow with greater confidence and accuracy.

4. REFORGER 79 movement data. Accuracy of cargo data is the key to effective shipload and prestow planning. Section II of this report outlines in detail the sequence of events involved in receipt of REFORGER 79 movement data for equipment scheduled for sealift deployment. The Computerized Movement Planning and Status System (COMPASS) is the best method of reporting movement requirements for shipload planning, as it provides a logical listing of all equipment, by size, to be moved. Variance from the normal equipment configuration must be reported, however.

5. Shipload planning.

a. An initial shipload analysis, to determine the number and types of ships needed in REFORGER 79, was conducted by MTMCTEA in March 1978. Based on a manually prepared list of unit equipment for sea deployment and an 80-percent stowage factor, five ships were requested for the sealift movement. A second analysis, in June 1978, based on revised equipment lists, resulted in a downward revision of estimated requirements to four ships.

b. In future REFORGER exercises or unit deployments, the transportability analysis reports generator (TARGET) will be able to substantially accelerate preliminary shipload planning. TARGET, an MTMC computer-based system, is designed to provide data on the transportability of individual equipment items, and a mix of items, associated with unit movements. For the latter function, TARGET collates information based on TOE unit equipment authorizations and details equipment characteristics.

When unit equipment authorizations (or onhand lists) are provided by line item number (LIN), COMPASS equipment characteristics file index number, and quantity, the TARGET system can provide unit equipment characteristics and therefore simplify prestow procedures.

6. Prestow planning.

a. MTMCEA started prestow planning upon receipt of a COMPASS data listing from FORSCOM dated 23 August 1978. These COMPASS data were used to determine which units would fit aboard a particular ship. Once a shipload was planned, initial cargo weights for each ship were checked with MSC, and adjustments were made to insure safe loading of each ship for the scheduled North Atlantic winter crossing. Restrictions placed on MTMC during prestow planning included eliminating classified or sensitive cargo from the GTS Callaghan, planned for offloading at Amsterdam, because of host-nation-imposed limits on US personnel within the POD. Also, the exact quantity and makeup of sea-air-interface cargo that would require special handling and stowage considerations were not identified to MTMC until late in November. Working within these restrictions and with a revised COMPASS listing dated 2 October, prestow plans were prepared for the four vessels involved.

b. Initial MTMC-developed prestow plans were distributed to MSCLANT, MTMC TTGE, and MTMCTEA at the REDCOM conference during 10-11 October 1978. Discussions at the conference revealed that major changes in the initial COMPASS printout were being made by the units involved. MTMC then requested that all COMPASS changes be made by 31 October 1978; however, these changes were not available until 9 November 1978.

c. The 9 November 1978 COMPASS listing reflected a large number of changes from the previous listing, and on 13 and 14 November the DTOs from Forts Hood and Riley reported additional changes and numerous corrections.

For instance, the 1st Cavalry Division deleted all GOER vehicles, increased TOW-equipped APCs from 12 to 15 per infantry and tank battalion, added 3 tanks per tank battalion, added 6 mobile kitchens, and eliminated 1 bridge launcher per tank battalion. Additionally, on 17 November MTMCEA received from the 1st Cavalry Division an equipment listing modifying the quantity of wheeled vehicles in many of its units, notably 2-1/2-ton and 5-ton cargo trucks. These changes caused yet another major revision in the prestow plans. Through an apparent distribution error, all deploying units did not receive copies of the COMPASS report. The ARRED action agent (1st Infantry Division) received copies; however,

the 13th COSCOM and 1st Cavalry Division did not. This complicated the process of identifying and correcting discrepancies in the reports and increased the difficulty of tracking later changes. All major units must receive copies of the COMPASS reports to insure accuracy and facilitate coordination.

d. On 23 November 1978, MTMC was notified by MSC that the USNS Comet had boiler problems and would not be available for use during deployment. MTMCEA immediately prepared prestow plans for the SS Washington, the then designated backup vessel; however, on 27 November, MSC notified MTMC that the SS Washington was offered by MARAD only as a backup for the SS Maine. On 28 November, MSC requested that MTMCEA restow all ships to determine if all the cargo would fit on the three remaining ships and a Challenger 1 class vessel. It was subsequently determined that a Challenger 1 class ship would be acceptable if most CONEX containers were consolidated in the lower holds of the Challenger 1 ship. MSC was so informed, and the SS American Corsair replaced the USNS Comet during deployment.

e. These latest revisions to prestow plans placed all sea-air-interface cargo on the USNS Meteor and removed most of the CONEXs previously planned for her; thus, much of the cargo weight was stowed high in the vessel. This placed the ship at its stability limit and required MTMCEA planners and Gulf Outport operators to carefully monitor the ship's actual stow to insure that these stability limitations were not exceeded. Final template stow plans for the deployment vessels are shown at annex A.

7. Summary.

a. Shipload and prestow planning were professionally conducted and vessel space was effectively utilized. As in previous REFORGER exercises, this planning was the cornerstone of successful port operations.

b. The use of COMPASS data was essential to effective shipload and prestow planning. The COMPASS format provides excellent control of cargo data, increases accuracy, and offers a base reference point for adjustments to cargo. COMPASS data must be provided as early as possible in the exercise planning stage. Additionally, COMPASS reports must be provided to all deploying units.

SECTION IV

UNIT PORT CALL AND INSTALLATION OUTLOADING

1. General. The REFORGER 79 exercise involved large rail shipments of vehicles and general cargo from Fort Hood, Texas, and Fort Riley, Kansas, to the ports of embarkation--Beaumont and Port Arthur, Texas. MTMC was responsible for insuring that shipping installations were aware of railcar ordering requirements and proper loading and securing practices, and provided an interface between rail carriers and shipping installations.

2. Unit port call message.

a. The MTMCEA port call message, dated 22 November 1978, instructed the 1st Infantry Division and 1st Cavalry Division to schedule equipment by train to arrive at the SPOE by ship and by unit. For example, unit equipment to be shipped on the USNS Meteor was to be loaded on designated railcars without mixing it with equipment designated for loading aboard any of the other three ships used during the exercise. Roadable equipment from Fort Hood was to be convoyed to the SPOE. In addition, equipment from Forts Devens, Leonard Wood, and Jackson and from Hunter Army Airfield was designated to move by commercial truck.

b. The REFORGER port call message was fully coordinated with both the REFORGER units and the SPOE. Compliance with the port call message was excellent.

3. Fort Riley installation outloading.

a. Installation rail-outloading capability study. An installation rail-outloading capability study was conducted by MTMCTEA 8 through 12 May 1978.

b. Rail facility description.

(1) The rail system at Fort Riley is depicted in figure 4-1. It consists of two areas--Camp Funston and Camp Whitside.

(2) The Camp Whitside area has four rail spurs with side-loading ramps, positioned between a double row of warehouse buildings. The area is suitable for loading general cargo, containers, and CONEXs; however, the staging area is insufficient for a large number of vehicles and/or trailers. Fifty railcars may be spotted in this area for loading or storage. The Camp Funston area has two main rail spurs, with eight loading points,

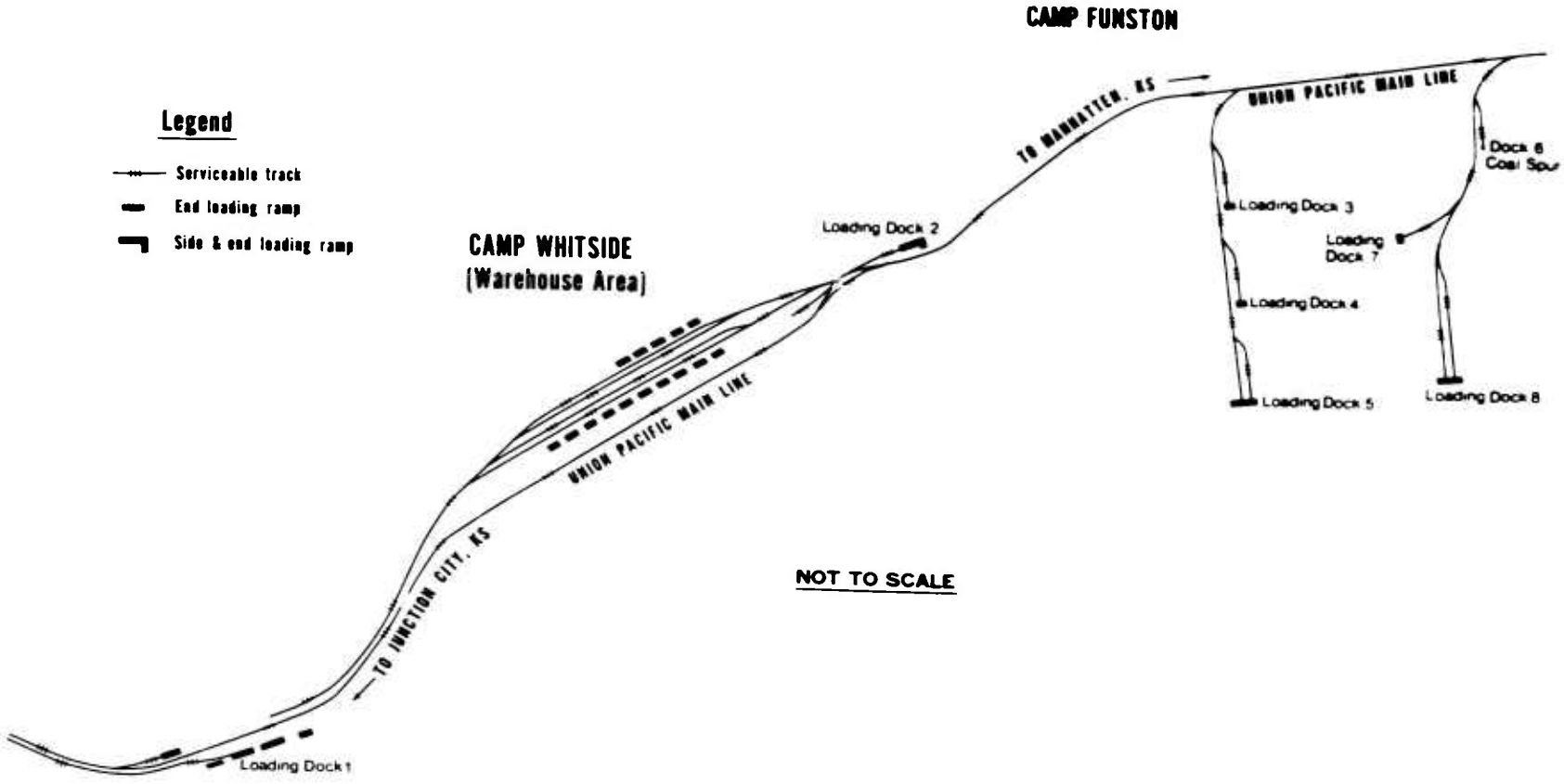


Figure 4-1. Fort Riley rail system.

and is well suited for roll-on loading of railcars. Adequate staging areas and permanent end-loading ramps are available.

(3) Table 4-1 summarizes Fort Riley's available facilities and railcar spotting capacities.

(4) The current sustained rail-outloading capability is 83 railcars per day.

TABLE 4-1
FORT RILEY RAIL FACILITIES

Track Number	Type Ramp	Lighting Available	Ramp Condition	Staging Area	Car Capacity	Load Commodity
Camp Funston						
1	Earth	No	Poor	Concrete and gravel	40	Tracked and wheeled veh
2	None	No		Concrete and gravel	10	Tracked and wheeled veh
3	Earth	Yes	Poor	Concrete and gravel	10	Tracked and wheeled veh
4	Earth	No	Poor	Concrete and gravel	8	Tracked and wheeled veh
5	Earth	Yes	Poor	Concrete and gravel	40	Small wheeled vehicles
6	None	Yes		Concrete and gravel	17	Small wheeled vehicles
7	Earth	No	Poor	Concrete and gravel	13	Small wheeled vehicles
8	None	No		Concrete and gravel	10	Small wheeled vehicles
Camp Whitside						
9	Side Ramp	Yes	Good	Gravel	33	Small tracked and wheeled veh
10	None	Yes		Gravel	33	Small tracked and wheeled veh
11	None	No		Gravel	24	Small tracked and wheeled veh
12	Side Ramp	No	Good	Gravel	24	Small tracked and wheeled veh

c. Rail outloading assistance.

(1) MTMC representatives conducted rail outloading training for officer and NCO personnel in October 1978. The training consisted of both classroom instruction and a practical exercise, during which representative REFORGER equipment was loaded onto a chain tiedown flatcar and a DODX flatcar. The training was well received by the trainees. In addition to the MTMC training, the installation transportation officer (ITO) conducted rail loading training for 30 to 40 personnel weekly from May

through October 1978. This combined training effort later proved of significant value during rail outloading.

(2) MTMC representatives were also on station from 6 to 11 December 1978 to provide technical assistance for the actual rail loadout of REFORGER 79 equipment. This assistance was to enhance the smoothness of operations, insure proper tiedown procedures, and provide liaison with railway representatives.

d. Rail outloading operations.

(1) Rail outloading operations commenced on 6 December 1978 and were concluded on 11 December 1978. Four loading sites were used, with equipment being loaded and secured by unit personnel, many of whom had received rail loading training.

(2) Miscellaneous equipment was loaded onto vehicles and staged at unit motor pools 1 to 2 days prior to the start of rail loading. All vehicles and CONEXs were then weighed on a scale near the rail loading site and staged at compounds nearby. The actual CONEX weight was marked on each container at the scale.

(3) Prime movers and trailers were loaded together whenever possible. To make optimum use of railcar space, truck cargo beds and trailers were loaded with shelters or other equipment, and trailer tongues were dropped under prime movers (fig 4-2). Wheeled vehicles were loaded circus fashion (a procedure whereby vehicles line up single file and traverse the length of the train, from car to car, stopping as the train fills up) at Camp Funston sites 4, 5, and 8.

Figure 4-2. Optimum use of space made by dropping trailer tongues under prime movers.

(4) CONEXs were loaded on gondola cars by cranes at Camp Whitside, with eight CONEXs per car. End or side blocking, required by AAR rules, was not employed to secure the CONEXs. Without such blocking, CONEXs may slide sideways or longitudinally within the gondola car, leading to possible damage to the CONEXs and their cargo. The Union Pacific rail inspector accepted the CONEX loads in spite of non-compliance with AAR rules.

(5) Railcars provided by the Union Pacific Railway were in good condition.

(6) The one Fort Riley REFORGER 79 train consisted of 68 cars, including 1 DODX guard car, and carried 171 tracked and 67 wheeled vehicles, 108 CONEXs, and 3 shelters, totaling 2,127,288 pounds of cargo. It departed on schedule at 1200, 12 December 1978. A summary of the rail loading, by car, is in table 4-2.

TABLE 4-2
FORT RILEY RAIL LOADING SUMMARY

Commodity	Type of Railcar	Dec 6	Dec 7	Dec 8	Dec 11
Wheeled vehicles	60-ft CTD	25	26	2	
Shelters	60-ft CTD		1		5
CONEX	Gondola	5		3	
Shelters	DODX				1

e. Problems encountered.

(1) Some of the wooden railcar spanners furnished by Fort Riley failed during loading operations. These failures permitted the wheels of vehicles traversing those spanners to fall between the railcars; however, wreckers were able to quickly lift the vehicle wheels from between the railcars with little, if any, damage. Broken spanners were subsequently replaced.

(2) In one instance a railcar moved forward while a vehicle was being loaded aboard. This increased the gap between railcars enough to allow a set of spanners to fall when a subsequent vehicle was crossing the gap. Metal rail chock blocks were then applied to railcar wheels to preclude further movement.

(3) Low temperatures and 2 inches of snowfall slowed the loading process somewhat on 7 and 8 December 1978. Some vehicles proved difficult to start in the cold weather and the snowfall caused vehicles to slide on ramps and spanners.

(4) The Union Pacific Railway inspector did not require chain tiedown hooks to be wired shut, as required by AAR open-top railcar loading rules (fig 4-3).

Figure 4-3. Chain tiedown hooks were not wired shut at Fort Riley.

(5) Some vehicles were loaded without adequate spacing between vehicles on railcars. Although MTMC recommended 12 to 18 inches between vehicles, in some instances vehicles were loaded with only 3 to 4 inches (fig 4-4) separating them.

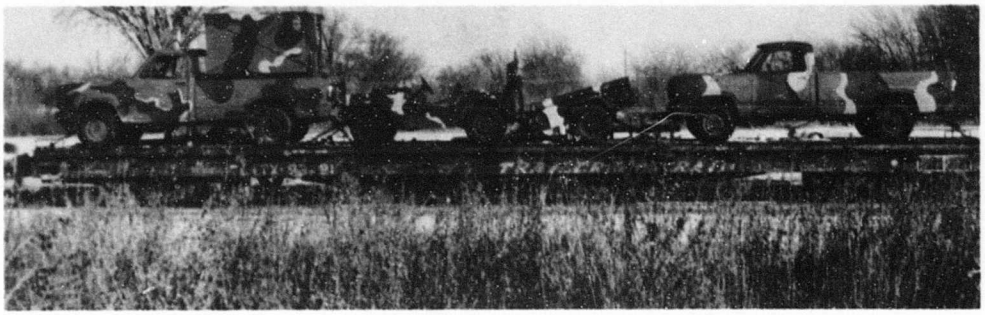


Figure 4-4. Vehicles not properly spaced on railcars at Fort Riley.

4. Fort Hood installation outloading.

a. Installation rail survey. An installation rail survey was conducted at Fort Hood by MTMC in October 1975.

b. Rail facility description.

(1) The rail system at Fort Hood is depicted in fig 4-5. The system consists of four areas, of which only the main railhead is capable of providing a sustained, high-volume loadout operation. All rail loadings were conducted at the main railhead except for bridge sections, which were loaded by tandem forklifts at a siding near the property disposal yard. The main railhead has four railroad sidings (sidings A through D), each with a concrete end ramp and railcar couplers to insure stability of the train during loadout operations. In addition, siding A has four concrete double-ended side-loading piers. Three asphalt staging areas are located adjacent to the main railhead, with the largest one directly in front of the four end ramps (siding A) (fig 4-6). The entire main ramp area is lighted. Railcar capacities of each siding of the main railhead are depicted in table 4-3.

(2) Table 4-4 depicts the capabilities of all loading sites at Fort Hood.

(3) Flatcars were loaded circus fashion over end ramps on all sidings except on siding A, where some cars were loaded utilizing side ramps. CONEXs and MILVANs were loaded by mobile crane at the end of siding C, opposite the end ramps.

(4) Fort Hood's sustained daily outloading capability is 202 railcars.

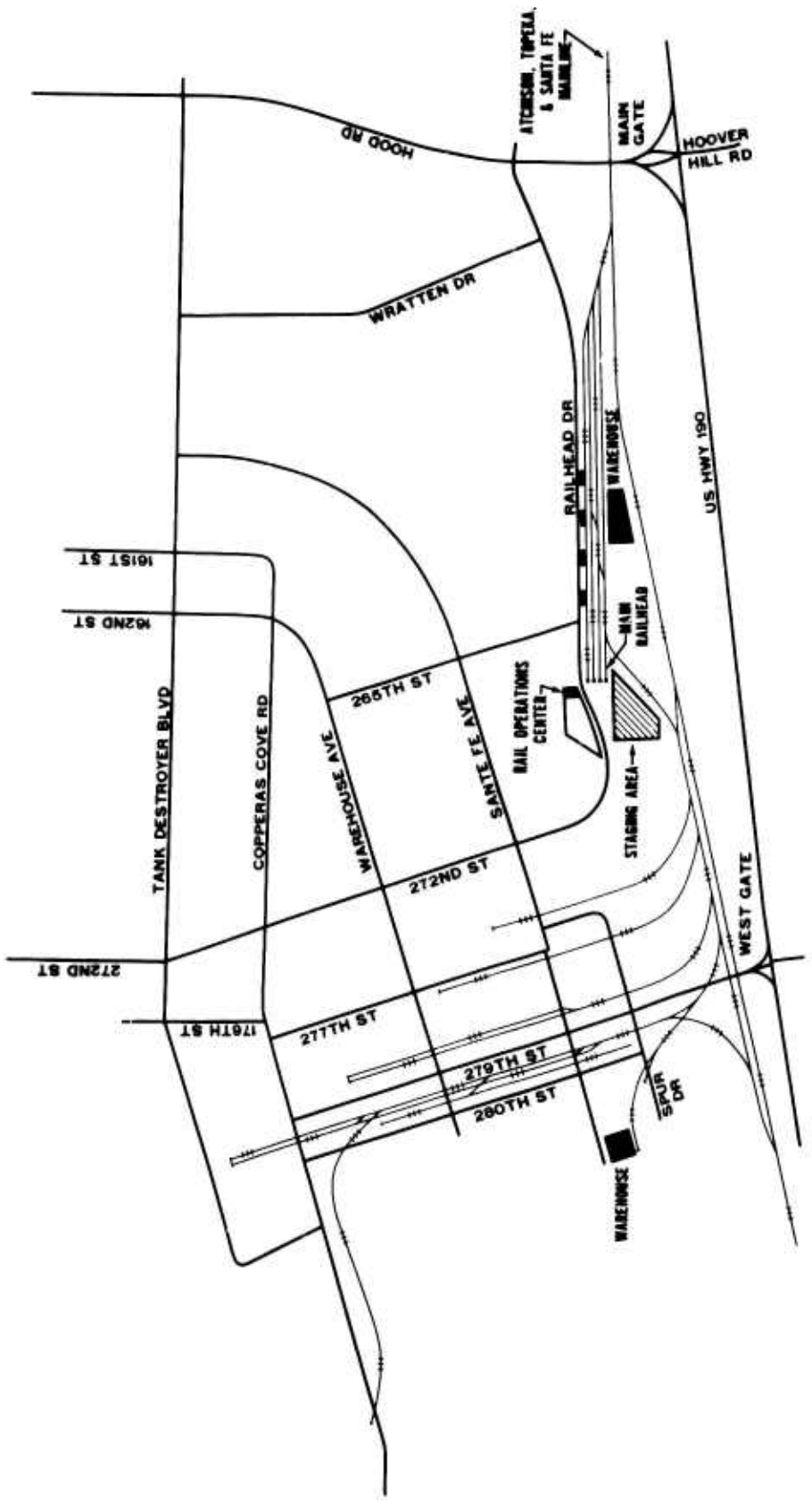


Figure 4-5. Rail outloading sites, Fort Hood, Texas.

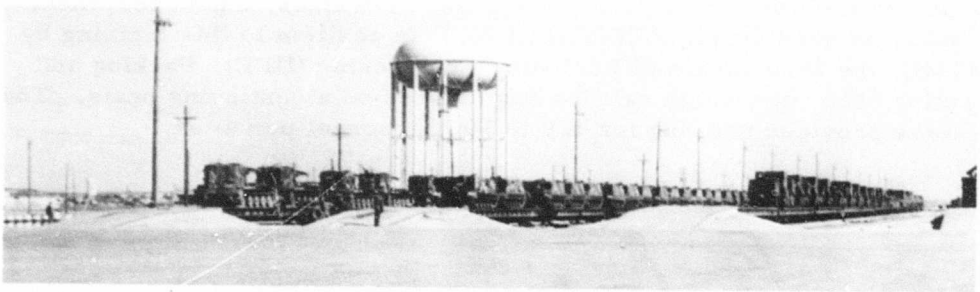


Figure 4-6. Concrete end ramps and asphalt staging area at Fort Hood.

TABLE 4-3
SIDING RAILCAR CAPACITIES - MAIN RAILHEAD, FORT HOOD

Siding	Capacity
A	50
B	28
C	17
D	6

TABLE 4-4
LOADING SITE CAPABILITIES, FORT HOOD

Site No.	End Ramps	Lighting Available	Surface Conditions	Staging Area	Storage Capacity	Access Availability
1	1 dirt	No	Good (gravel)	None	11 cars	Good
2	2 concrete	No	Good (gravel)	None	12 cars	Good
3	1 concrete	No	Good (gravel)	None	17 cars	Good
4	1 sunken	No	Good (gravel)	None	6 cars	Good
5	4 concrete	Yes	Excellent (asphalt)	250 vehicles	225 cars	Excellent

c. Rail outloading assistance.

(1) MTMC representatives conducted rail outloading training in October 1978. Training consisted of both classroom instruction and a practical exercise in loading and securing representative REFORGER equipment onto DODX flatcars (fig 4-7). More than 60 personnel attended and enthusiastically received the training. In particular, an M60 test tie-down procedure using two wire-rope turnbuckle combinations at each end of a tank, plus metal chocks at each end of the tracks, was demonstrated. (This test tiedown method was to be used in lieu of the standard method of

cable end tiedowns, wooden track chocks, H-frames, and bogey wheel chocks, as used during REFORGER 78.) In addition to this training by MTMC, the Directorate of Facilities Engineering (DFE), Packing and Crating Shop, conducted rail loading classes on a continuing basis. These classes provided training for 120 to 300 personnel per week.

Figure 4-7. Rail outloading training being conducted at Fort Hood by MTMC.

(2) MTMC representatives were onsite from 4 through 13 December 1978 to provide technical assistance during REFORGER 79 rail loadout.

d. Rail outloading operations.

(1) Rail outloading operations commenced 4 December 1978, with the establishment of a rail operations center at the railhead, and were completed 14 December 1978. The entire outloading operation took place at the railhead, with equipment loaded and secured by unit loading teams (fig 4-8). Table 4-5 summarizes the rail outloading operation.

Figure 4-8. Unit personnel securing M60 tanks, Fort Hood, Texas.

(2) Equipment to be rail loaded was staged in unit motor pools in accordance with loading plans provided in advance by the division transportation officer. Vehicles were arranged in the order they were to be loaded on railcars. Initially, the vehicles were moved from the unit motor pool area to the staging area adjacent to end ramps on sidings A, B, C, and D for a second staging prior to loading. Subsequently, the second staging was eliminated and vehicles were moved from motor pool areas to the railhead and driven directly onto railcars.

(3) All vehicles were driven onto railcars, prime movers were loaded with trailers attached, and all other equipment was lifted onto railcars by mobile crane or, in the case of bridge units, by tandem forklifts. CONEXs were lifted into gondola cars.

(4) Loading operations were conducted from 0800 through 1730 daily without serious delays.

TABLE 4-5
SUMMARY OF TRAIN LOADING SCHEDULE, FORT HOOD

	Train Numbers					
	1	2	3	4	5	
Date Loaded	4-5 Dec	6-7 Dec	8-9 Dec	10-11 Dec	12-13 Dec	
Destination	Beaumont	Beaumont	Beaumont	Beaumont	Port Arthur	
Departure Time	060845 Dec	080930 Dec	100950 Dec	120720 Dec	140730 Dec	
Arrival Time	070225 Dec	090215 Dec	110050 Dec	122150 Dec	151435 Dec	
Lapsed Time	17.75 hrs	16.75 hrs	15 hrs	14.5 hrs	31 hrs	
Total S/T	1236	2539.8	3584.6	2971.9	3105.5	
Total Pounds	2,475,927	5,081,927	7,191,436	5,966,150	6,210,994	
Railcar Type	Number Railcars Commodity Loaded	Number Railcars Commodity Loaded	Number Railcars Commodity Loaded	Number Railcars Commodity Loaded	Number Railcars Commodity Loaded	Total Railcars
53'6" CTD Flat	30/M577, M125, M220, M113A1	19/M113A1, M109, M548, M578, M577 M220	10/M113A1, M220 M577A1	19/M113, M220 M106, M577	4/M113, M220	82
53'6" STD Flat	3/M578					3
60' CTD Flat		44/M577A1, M113A1, M109, M548, M578	10/M113, 2D7F M123A1C, M172A1		11/M113, M220 M577, M125	66
60' STD Flat	1/M578					1
68' CTD Flat	4/M561, PU670, PU628, PU617, PU625	4/M578, M109, M548	8/M220, M113A1, M125A1, M577A1	1/M113A1	1/Forklift, Crane, M561	18
89' TOFC					10/MILVANs 12T Vans, 6T Vans, M127A1C	10
89' CTD Flat		5/CONEX, M561, M792			2/M113A1, M561	7
89'4" CTD Flat	2/M561, PU678, M792		4/M561, M123, M172A1, M792			6
Gondola	3/CONEX	4/CONEX	3/CONEX, bridge	7/CONEX, bridge	7/CONEX, Bridge	25
54' DODX Flat			32/M88, M60A1, D7E, M728	26/M60A1, M88 AVLB	27/M60A1, M88, AVLB	85
Totals						
Railcars	43	76	67	53	62	303
Wheeled Veh	24	16	25	0	15	
Tracked Veh	101	175	115	105	95	
Total Veh	125	191	140	105	110	
CONEXs	30	37	20	61	38	

(5) Commercial railcars were provided by the Atchison, Topeka, and Sante Fe (ATSF). Except for two gondola cars filled with debris, all railcars were in fair to very good condition. A railcar maintenance crew was onsite throughout the loading exercise to repair or modify railcars as required. Railway personnel were also at the loading site at all times to provide any other assistance required. The service provided by the ATSF was exceptional. DODX railcars were in good condition.

(6) Actual rail loading and securing was supervised by Directorate of Facilities Engineering, packing and crating personnel. These experienced individuals were directly instrumental in making the rail outloading successful. They insured the constant availability of tiedown equipment and directly supervised tiedown applications.

(7) It was obvious that unit personnel had received considerable rail loading training prior to the REFORGER 79 exercise, because their performance surpassed that observed in prior REFORGER exercises. Generally, unit personnel displayed great enthusiasm throughout the rail loadout. The rail loading classes conducted by DFE and MTMC were undoubtedly a contributing factor to the rail loadout success.

(8) Loading plans provided by the installation transportation officer were outstanding and permitted easy modification, as required by railcar-type change or unit equipment substitutions. ITO personnel were constantly on hand for transportation coordination.

(9) The division transportation officer and/or his representatives were at the loading site to provide instant liaison with division units and the ITO. The interaction of the ITO and DTO staffs was commendable. Each had a clear understanding of his duties, responsibilities, and obligations, with each acting effectively in his area of responsibility.

(10) Deploying units installed 5/8-inch wire-rope loops at M113-series tracked vehicle towing and tiedown provisions in lieu of the BILI (basic issue list items) towing, or T-shackles, or the transportability guidance technical manual (TGTM) specified shackles (clevis-assy, suspension, bolt-and-nut-type) (fig 4-9). While not in accordance with TM 55-2200-001-12, or AAR procedures, rail inspectors approved these wire-rope loops for use with railcar chain tiedowns. No en route cargo damage resulted from this method; however, these loops later proved incompatible with shipboard peck-and-hale lashing equipment. It is recommended that, in the future, deploying units comply with TGTM requirements and install specified shackles on all vehicles being shipped by rail or sea.

(11) MP customs personnel performed customs inspections at Fort Hood. These inspections, conducted on all REFORGER vehicles in

Figure 4-9. Wire rope loops were affixed to APCs in unit motor pools.

respective unit motor pools, were so thorough that even vehicle floorboards were removed. After a vehicle received its customs inspection, it was sealed by customs personnel, and any person subsequently entering the vehicle was first searched. This search procedure caused some delay in loading vehicles onto train 1; however, this problem was alleviated by eliminating the staging of vehicles at the rail loading site. Drivers never dismounted from vehicles from the time they departed the motor pools until the vehicles were loaded on railcars of trains 2 through 5 (fig 4-10).

(12) M60s, M88s, and other heavy tracked vehicles were driven onto railcars circus fashion without the use of spanners between railcars (fig 4-11).

(a) With the exception of three M60s, all heavy tracked vehicles were secured by using a test method consisting of end blocks on the tracks and two turnbuckle/wire-rope tiedowns at each end of each vehicle (fig 4-12). This method eliminated the use of the wooden H-frame between

Figure 4-10. To facilitate rail loading, drivers remained with their vehicles until after they were rail-loaded.

Figure 4-11. Circus-style rail loading of M88's and tanks.

the tracks and two bogey chocks on each side of each vehicle. MTMC has recommended and the AAR has adopted this securement method as standard for tank movement on unit trains during readiness exercises and/or emergencies.

(b) The turnbuckle tiedown system proved to be more expedient and easier to perform than the conventional method. The turnbuckles were applied with two loops of 5/8-inch steel cable at each end of the turnbuckle; one, a long loop, was applied to the railcar stake pocket, and the other, a small loop, was affixed to the towing shackle on the vehicle. It is recommended that, if this system is used in the future, the upper small wire loops be replaced by an additional shackle attached through the towing shackle on the vehicle (fig 4-13), as performed at the

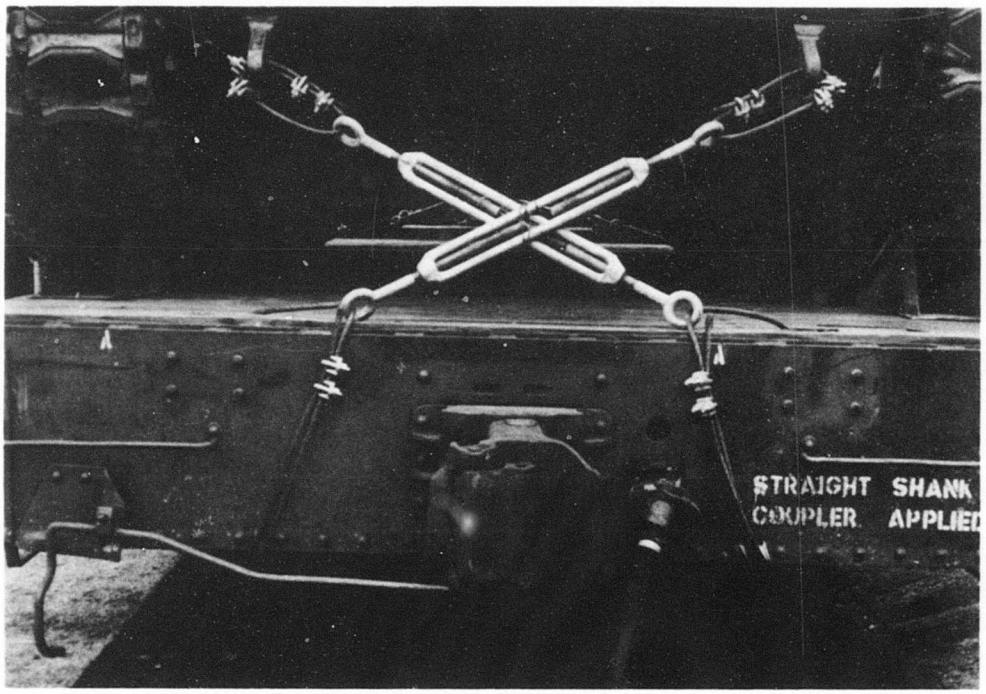


Figure 4-12. Turnbuckle tiedown with two wire-rope loops and end blocking.

ports of Beaumont and Port Arthur during redeployment rail-loading operations. This method provides not only for faster tiedown application, but also for more positive holding strength than that provided by a wire-rope loop secured by four cable clamps and is compatible with shipboard peck-and-hale lashing equipment.

(c) Three M60s were secured by a second test method, consisting of only metal chock blocks at the end of each tread and six metal side blocks, three per side on the inside of both tracks (fig 4-14). All tiedowns, bogey wheel chocks, and wooden H-frames were eliminated. (A similar method is often used by industry for shipping tracked construction equipment weighing up to 50 tons.) The three test tanks were loaded on two railcars as part of train 3. Loose turnbuckle tiedowns were applied as emergency measures should the test loads prove too unstable in transit to complete the journey without tiedowns. A caboose was coupled adjacent to the two experimentally loaded cars, with representatives of MTMCTEA, the AAR, and the ATSF Railroad aboard to monitor the load

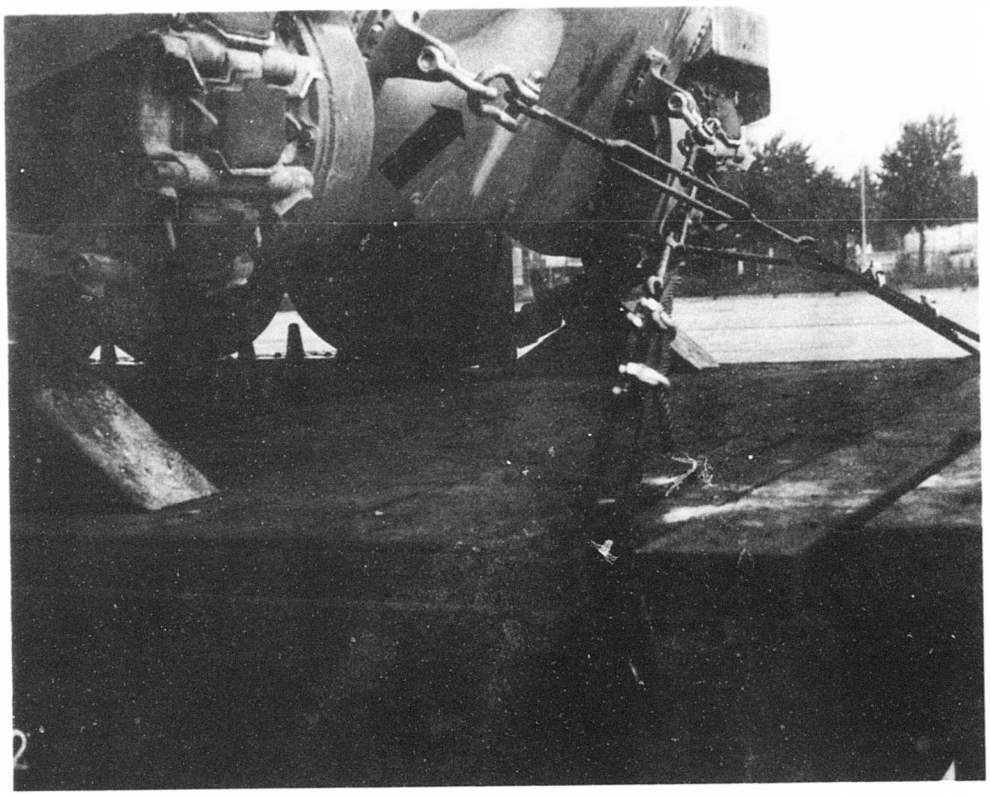


Figure 4-13. Turnbuckle tiedown with double shackles.

at all times during transit. All three test tanks arrived at Beaumont without shifting, as confirmed by chalk markings applied after loading at Fort Hood.

(d) Both experimental loads stood up to heavy bumping during train makeup, speeds over 50 mph, and a "rail spread" that caused a sudden stop of the train. MTMC has recommended that, although successful during REFORGER 79, the second test method (without tiedowns) not be pursued further at this time, as the supervision and expertise required to use this method are not readily available at all military installations.

(e) The first test method (described in 4d(12)(a) above), with turnbuckles/wire rope and end chocks, was an unqualified success and should be utilized for movement of heavy tracked vehicles on special military trains. The AAR report and the MTMCTEA report are in annex B.

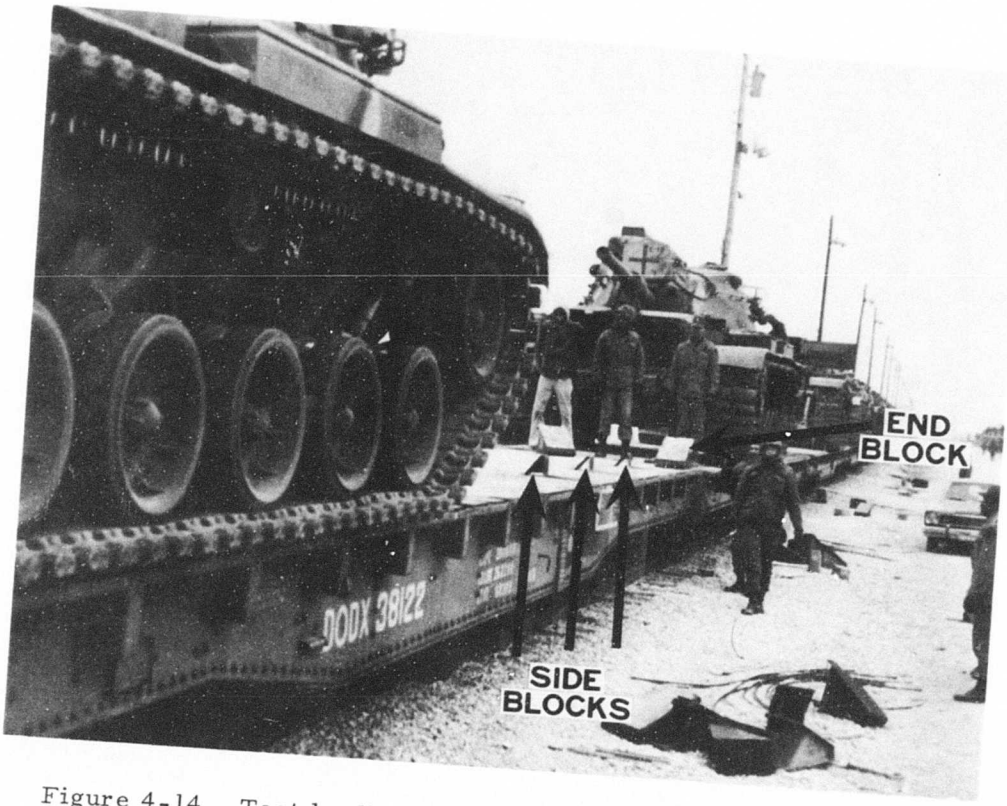


Figure 4-14. Test loading with only tread side and end blocking.

e. Problem areas.

(1) Delays in loading vehicles onto railcars for train 1 were encountered due to customs requirements; see paragraph 4d(11).

(2) It was discovered prior to equipment moveout from Fort Hood, that sea-air interface cargo had not been marked as prescribed at the Beaumont conference on 26 October 1978. Contact was then made with the DTO at Fort Riley (ARRED action agent) to determine the proper markings to be utilized. (Standardized sea-air interface cargo marking is necessary for quick identification of this cargo at both SPOE and SPOD, since this cargo requires special ship stowage and segregation.) With the exception of CONEXs, which were somehow overlooked, all sea-air interface cargo was marked prior to departure from the installation. These CONEXs were later identified and marked at the port by port operations personnel.

(3) Some difficulty was encountered in applying turnbuckle tiedowns to heavy tracked vehicles. For the most part, loading team personnel did not know the proper method of applying cable clamps to wire rope loops. In addition, there were instances of juxtapositioning of small and large loops. Another frequent problem was that the nuts on a number of cable clamps were not sufficiently tight. (The use of double shackles, as recommended above (see paragraph 4d(12)(b)), for attaching turnbuckles to vehicles will alleviate most of these problems.)

(4) To preclude extending tank gun tubes over the ends of railcars (prohibited by current AAR loading rules), M60 tanks were loaded with only 2- to 3-inch clearance between the end of the gun tube on the front M60 and the turret bustle basket of the rear M60 (fig 4-15). In addition, the front M60 was loaded very close to the end of the railcar, providing less than the desired amount of room for the end tiedowns (fig 4-16). (MTMC is attempting to obtain AAR approval of a procedure to allow gun tubes to extend approximately 1 foot over the end of railcars, thus providing more space between tanks and more room at the front of the railcar to permit easier applications of tiedowns (reference annex B).

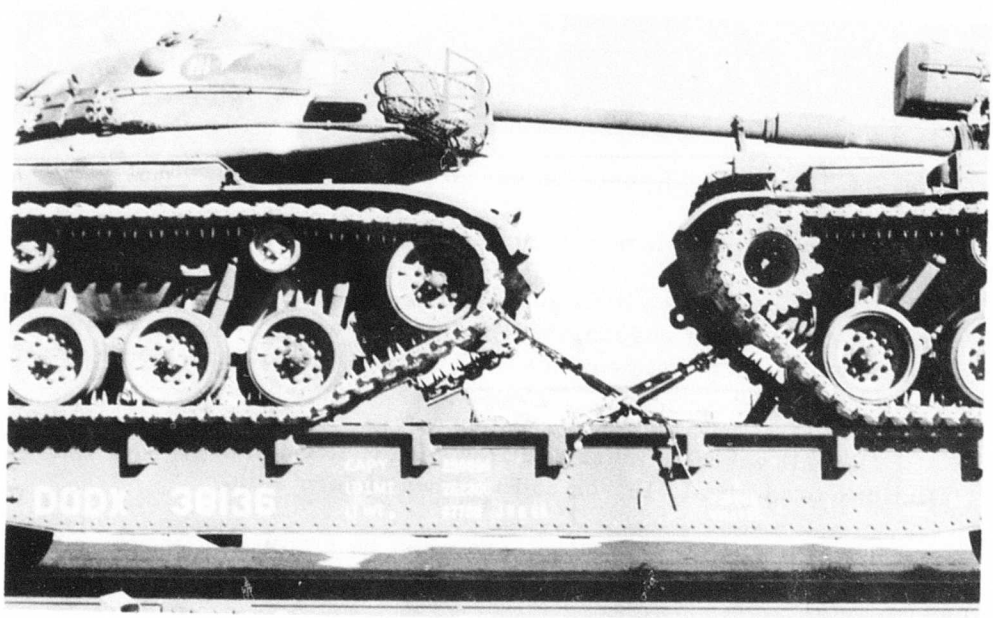


Figure 4-15. Lack of clearance between gun tube and turret.

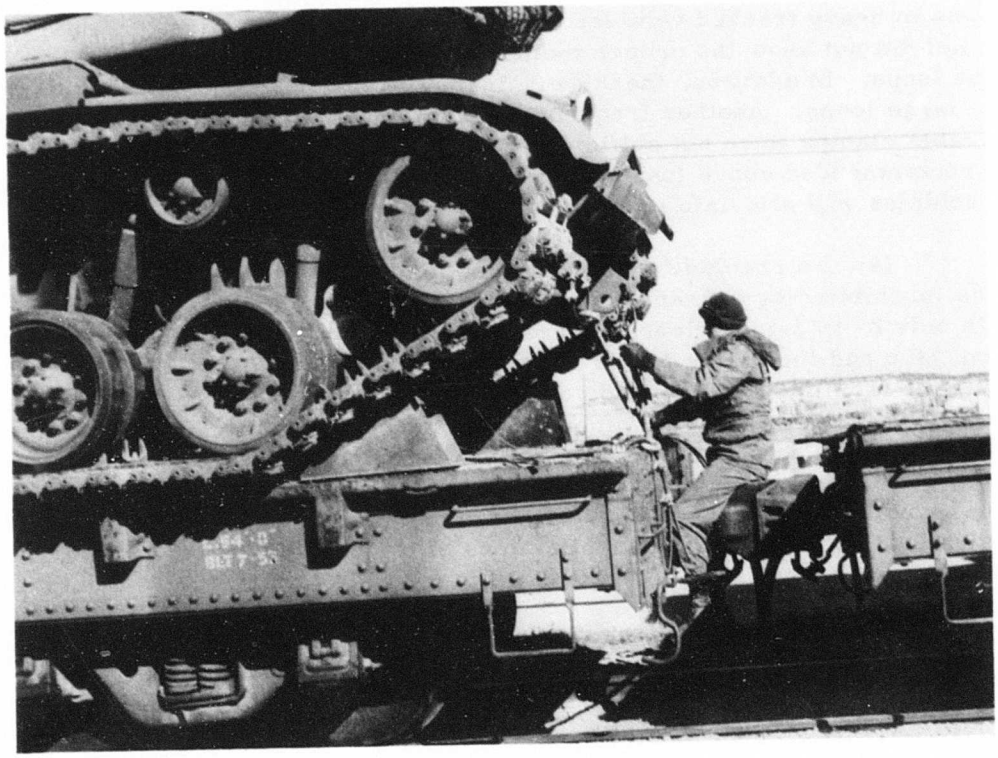


Figure 4-16. Lack of space on car to properly apply front tiedown.

5. Recommendations. It is recommended that:

a. MTMC provide written guidance to deploying units/installations, pointing out deployment responsibilities that have been repeatedly performed improperly during previous REFORGER exercises. Some examples could be:

(1) All vehicles must be fitted with tiedown shackles at origin installations to facilitate lift-on and tiedown aboard ship.

(2) Five-gallon gasoline cans must be emptied, purged, and dried.

(3) Oxygen and acetylene bottles must be segregated and containerized. In general, guidance pertaining to shipping dangerous cargoes must be emphasized.

(4) Military vehicles must be shipped in reduced configuration, as required by AR 220-10, or exceptions must be requested.

b. The tank securement method, consisting of track end and side blocking, not be pursued further at this time.

c. All vehicles be fitted at origin with tiedown shackles, as specified in applicable transportability guidance technical manuals. This is particularly important where eventual shipboard securement is planned and other devices, such as wire rope loops or T-shackles, are incompatible with ship tiedown systems.

d. Insofar as possible, equipment be configured for shiploading at the time of departure from home station.

e. Railcar truck wheels be chocked to prevent the inadvertent movement of railcars during rail loading operations.

f. Railcar chain-tiedown hook openings be wired to prevent them from coming loose if chains become slack during shipment.

g. A minimum of 12-inch spacing be maintained between vehicles loaded on flatcars (with the exception of M60A1 tanks) to allow adequate room for securement devices and to preclude damage caused by vehicles rubbing together during railcar movement.

SECTION V

CONUS LINE HAUL TO SPOE

1. General.

a. MTMC CONUS deployment activities for REFORGER 79 encompassed the movement of vehicles and equipment from seven installations. The major units transported were the 1st Infantry Division (Mechanized) (-), 1st Cavalry Division (-), and supporting units. Two SPOEs were used for REFORGER 79, Beaumont and Port Arthur, Texas. Movement to the SPOE was by rail, military highway convoy, and commercial motor carrier. Rail was the predominant mode.

b. MTMCEA was tasked with the responsibility of providing transportation planning, management, and coordination for the movement of all REFORGER 79 cargo in CONUS.

2. Planning.

a. A REFORGER 79 planning conference was held 7 and 8 June 1978, at Fort Riley, Kansas, to resolve identified problem areas, coordinate line-haul actions, and provide an overview briefing concerning the deployment phase of the exercise. The general line-haul plan involved transportation of equipment from Forts Hood and Riley to Beaumont and Port Arthur, Texas, via rail. Additionally, it was planned that Fort Hood would use military motor convoy to move convoyable vehicles due to the proximity of the post to both SPOEs.

b. At the USREDCOM REFORGER 79 planning conference held 11 through 13 October 1978, at MacDill Air Force Base, Florida, conferees further refined line-haul transportation requirements.

c. A REFORGER 79 planning conference was held in conjunction with REFORGER 78 redeployment activities at Beaumont, Texas, 26 October 1978. Port operations and port support requirements were the major topics of this conference although line-haul requirements were addressed.

d. A REFORGER 79 rail-coordination meeting was held 8 November 1978, at HQ MTMCEA, with representatives of the participating rail carriers. Other attendees included installation and division transportation officers and representatives of the 13th COSCOM and the Association of American Railroads.

(1) MTMCEA gave conferees preliminary route proposal packages for their evaluation. Railroad representatives indicated that their evaluation of detailed route schedules would be completed by the requested date.

(2) Discussions of deployment rail-loading plans, which are railcar requirements and concepts of rail operations unique to this exercise, were initiated by the Negotiations Division, Directorate of Inland Traffic, HQ MTMC. Amendments to applicable Section 22, Tenders, were agreed upon during the conference and resulted in the following:

(a) In conjunction with demurrage rules, an extension of free time for loading and unloading railcars to 72 hours for constructive placement was granted.

(b) Substitution rules for flatcars ordered for REFORGER were formulated as follows:

1. Carriers, for their own convenience, could furnish three 60-foot or longer, single-deck flatcars for two 89-foot, single-deck flatcars. Minimum weight charge for the three shorter flatcars, if furnished, was established as 40,000 pounds.

2. Carriers could furnish five single-deck flatcars, 50 feet or longer, for three 89-foot, single-deck flatcars. The minimum weight would be 72,000 pounds total for the five shorter flatcars furnished.

(3) Origin installation transportation officers were informed of MTMC reporting requirements for deployment and redeployment rail movement. ITOs were informed that military traffic expediting (MTX) service should be requested to assist them in monitoring railcars during transit. In addition, the need to identify hazardous, sensitive, and classified cargo, when submitting DD Forms 1085 for routing and when compiling GBLs, was stressed. ITOs were reminded of their responsibility for ordering all railcars, to include the number of chain sets per car and their tensile strengths, and for insuring that each car was inspected prior to acceptance.

(4) Carrier representatives were authorized to coordinate directly with the origin ITO concerning car orders and to work out specifics on the number of chain sets and tiedown tensile strengths.

(5) Minimum weight per carload was another planning criterion for railcar requirements. Carloads of military impedimenta are subject

to a 24,000-pound minimum weight on single-deck flatcars that are not covered by substitution rules, and on gondola, TOFC, and COFC cars. Since the charge for bilevel and trilevel railcars is based on a minimum of 40,000 pounds and 50,000 pounds respectively, per car, and since the bulk of unit equipment scheduled for rail movement from Forts Riley and Hood was not suitable for bilevel or trilevel car movement, none of these cars were programed.

3. Communications.

a. MTMCEA opened its REFORGER operations center at Beaumont, Texas, on 6 December 1978, to facilitate and coordinate the flow of equipment and vehicles to SPOE. Movement status charts were maintained as an aid in monitoring the progress of the equipment movement to Beaumont and Port Arthur, Texas.

b. Data were accumulated by telephonic contact with the systems operation center of each participating rail carrier; also, ITOs at Forts Hood and Riley notified the REFORGER operations center when their respective block of trains left their installations.

c. ITOs utilized the MTX service to monitor rail movements, as suggested by MTMC.

d. Commercial truck movements were reported on an exception basis. ITOs provided the MTMCEA operations center with the following information: number of trucks released, trailer numbers, GBL numbers, and cargo on each trailer and its time of release. This information was given daily after the carrier's last piece of equipment departed from the installation. MTMCEA did not initiate follow-up procedures unless a carrier missed its estimated time of arrival.

4. Rail operations.

a. Final routes selected for REFORGER 79 rail moves from Forts Hood and Riley are depicted in fig 5-1. The rail distance from Fort Hood to Port Arthur is 344 miles; from Fort Hood to Beaumont, 275 miles; and from Fort Riley to Beaumont, 766 miles.

b. The chosen routes involved the use of the following rail carriers:

(1) Atchison, Topeka and Santa Fe Railroad Company (ATSF).

(2) Union Pacific Railroad Company (UP).

(3) Kansas City Southern Railway Company (KCS).

DEPLOYMENT RAIL ROUTES

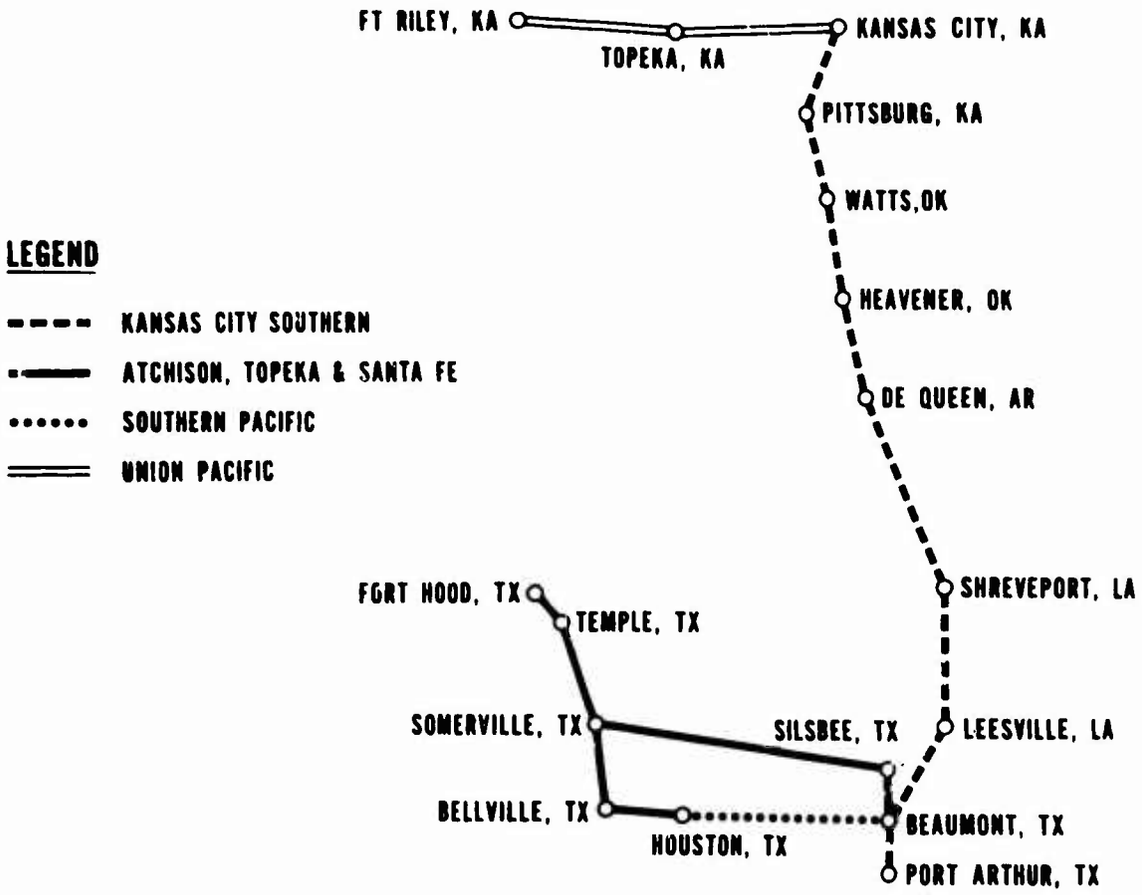


Figure 5-1. Deployment rail routes.

c. Six trains, with a total of 372 cars, were used in support of the REFORGER 79 deployment. Only the fifth Fort Hood train experienced a significant delay; however, port operations were not impaired since all trains arrived within the scheduled port staging period. Table 5-1 summarizes train transit times.

d. Fort Hood train number 3 experienced a "rail spread" at Silsbee, Texas, approximately 30 miles northeast of Beaumont, on 11 December 1978. The train, which was restarting after a stop at Silsbee, had attained a speed of about 5 mph when the rail spread occurred. Three railcars, all DODX 100-ton cars loaded with M60 tanks, derailed without causing any

cargo damage. All three cars were held briefly at Silsbee for inspection, but were released that same day.

TABLE 5-1
TRAIN ARRIVALS

Origin	Destination	No. Cars	Scheduled Transit Times (Hours)	Actual Transit Times (Hours)
Fort Hood, Texas	Beaumont, Texas	44	12:00	17:25
Fort Hood, Texas	Beaumont, Texas	77	12:00	16:45
Fort Hood, Texas	Beaumont, Texas	68	12:00	15:00
Fort Hood, Texas	Beaumont, Texas	54	12:00	14:30
Fort Hood, Texas	Beaumont, Texas	61	12:00	34:00
Fort Riley, Kansas	Port Arthur, Texas	68	59.50	48:30

e. Equipment arriving by rail experienced no noticeable damage.

f. The railcar breakout for the REFORGER deployment consisted of 1 Department of Defense-owned (DODX) guard car, 5 cabooses (used to transport guards from Fort Hood and observers of the experimental loads on train number 3), 281 commercial railcars, and 85 100-ton DODX flatcars. The total tonnage moved was 14,501 STON.

g. DODX flatcars were in good to very good condition. The one DODX guard car was in good condition.

h. Only the Fort Riley train arrived within the scheduled transit time submitted by the participating carriers. The securing of the military equipment on this train was inadequate, as a large percentage of chain tiedowns were loose. Also some loads were improperly secured. The Union Pacific and Kansas City Southern rail inspectors had inspected and accepted the train secured in this matter.

5. Commercial motor freight operations.

a. The REFORGER 79 motor freight operations involved the assets of five commercial truck companies transporting unit equipment from four installations, as depicted in table 5-2. No en route problems were encountered, and all loads arrived on schedule.

b. Table 5-2 also summarizes the transit times for the six commercial trucks.

TABLE 5-2
COMMERCIAL MOTOR FREIGHT TRANSIT TIMES

Unit	Vehicles	Departure Time	Arrival Time	Carrier(s)
Fort Leonard Wood	1*	11 Dec 1530 hrs	12 Dec 0920 hrs	Tristate Motor Transit
	1	11 Dec 1530 hrs	13 Dec 1600 hrs	
Total	1 3	12 Dec 1800 hrs	14 Dec 1200 hrs	
Fort Devens	1	4 Dec 1500 hrs	10 Dec 0700 hrs	Aero Trucking Company
Fort Jackson	1	8 Dec 1130 hrs	11 Dec 0800 hrs	J. H. Rose Trucking Company
Hunter Army Airfield	1	5 Dec 1430 hrs	11 Dec 1015 hrs	East Texas Motor Freight System

*Signature Security Service (SSS) and dual driver protective service (DDPS) provided.

6. Military motor convoy.

a. Under the auspices of the 13th COSCOM Movements Control Center, Fort Hood operated four military convoys to Beaumont and Port Arthur. Convoys originated at Prichard Station; there, drivers were given routing briefings, and convoys were organized into three serials, except for the last convoy, which consisted of four serials.

b. As convoys approached a release point operated by the 180th Transportation Battalion at China, Texas, about 15 miles west of Beaumont, they were notified by posted signs to call the release point by radio. At that time, 1/4-ton trucks with FOLLOW ME signs were dispatched from the release point to meet the convoys, to break them into 15- to 20-vehicle units (later larger units), and to lead them into the release point.

c. At the release point, all vehicles were refueled to three-quarters full, to comply with ocean shipping requirements, and were broken into groups by vehicle type and unit identification code (UIC). As time permitted, personnel at the release point performed vehicle height-reduction tasks not done at Fort Hood and placed dismantled items in the beds of vehicles. (This procedure was used mainly for 1/4-ton trucks.)

d. The original plan was for the port documentation section to call vehicles forward, by type, from the release point; however, after the first day of operations, this procedure was abandoned. Local police, who provided escort and traffic control from China to the ports, requested that convoys be configured so more adequate traffic control could be provided. After that, convoys were configured as determined by release point personnel. Another factor that led to this adjustment was that each day the release point had to be cleared of all vehicles to provide room for subsequent convoy arrivals. Some port documentation procedures were revised because of this change.

e. A force of 50 drivers was used to move vehicles, in increments of from 20 to 25 vehicles, from the release point to the ports. These vehicle increments became increasingly larger as the exercise progressed and port staging operations improved.

f. Table 5-3 summarizes the transit times of convoys from Fort Hood to the release point at China, Texas.

TABLE 5-3
CONVOY ARRIVALS

Convoy No.	Origin	No. Vehicles	Departure Time	Arrival Time	Release Point
1	Fort Hood, Texas	176	120400	121510	China, Texas
2	Fort Hood, Texas	164	130400	131320	China. Texas
3	Fort Hood, Texas	168	140400	141025	China, Texas
4	Fort Hood, Texas	177	150400	151255	China. Texas

7. Summary. Line-haul operations to the SPOE during deployment were characterized by thorough planning and careful execution. While minor delays occurred, SPOE operations went smoothly.

SECTION VI

CONUS SPOE OPERATIONS

1. General.

a. The ports of Beaumont and Port Arthur, Texas, were utilized to conduct all aspects of cargo receipt, segregation, staging, and shiploading of material for the CONUS portion of the deployment phase of REFORGER 79. The areas utilized at both ports are depicted in figures 6-1 and 6-2, and include rail sidings and offloading area, staging areas, ship berths, and operations centers.

b. As MTMC REFORGER 79 exercise director for CONUS surface transportation and port operations, MTMCEA established an operations center at Beaumont to provide the necessary monitoring of operations and interface with all elements involved in deployment activities. The operations center commenced operations on 6 December 1978 and ceased operations on 30 December 1978. During port operations, lines of responsibility were clearly defined and understood by all exercise participants. (See fig 6-3 for task organization.) The Commander, Gulf Outport, was tasked to operate the ports for MTMCEA.

c. The 13th Corps Support Command (COSCOM), III Corps, Fort Hood, Texas, provided port support, consisting of maintenance contact teams and cargo security personnel.

d. Operations meetings were conducted daily at 0900, beginning 6 December 1978. Representatives of MTMCEA, the Port of Beaumont, the stevedoring contractor, MSC, 13th COSCOM, and MP customs attended these meetings, which were designed to coordinate daily operations and address and resolve specific problem areas.

2. Cargo receipt and staging operations.

a. Upon arrival of the REFORGER 79 cargo at Beaumont by railcars, commercial trucks, and military highway convoys, equipment was offloaded and placed in appropriate ship staging areas, where it was segregated by type of cargo. At Port Arthur, rail-loaded equipment was not offloaded but was held for direct railcar-to-ship loading.

b. REFORGER equipment, for the most part, arrived in operable condition; however, a small number of vehicles later required starting assistance by 13th COSCOM contact teams. There was no noteworthy intransit damage to any rail-transported equipment.

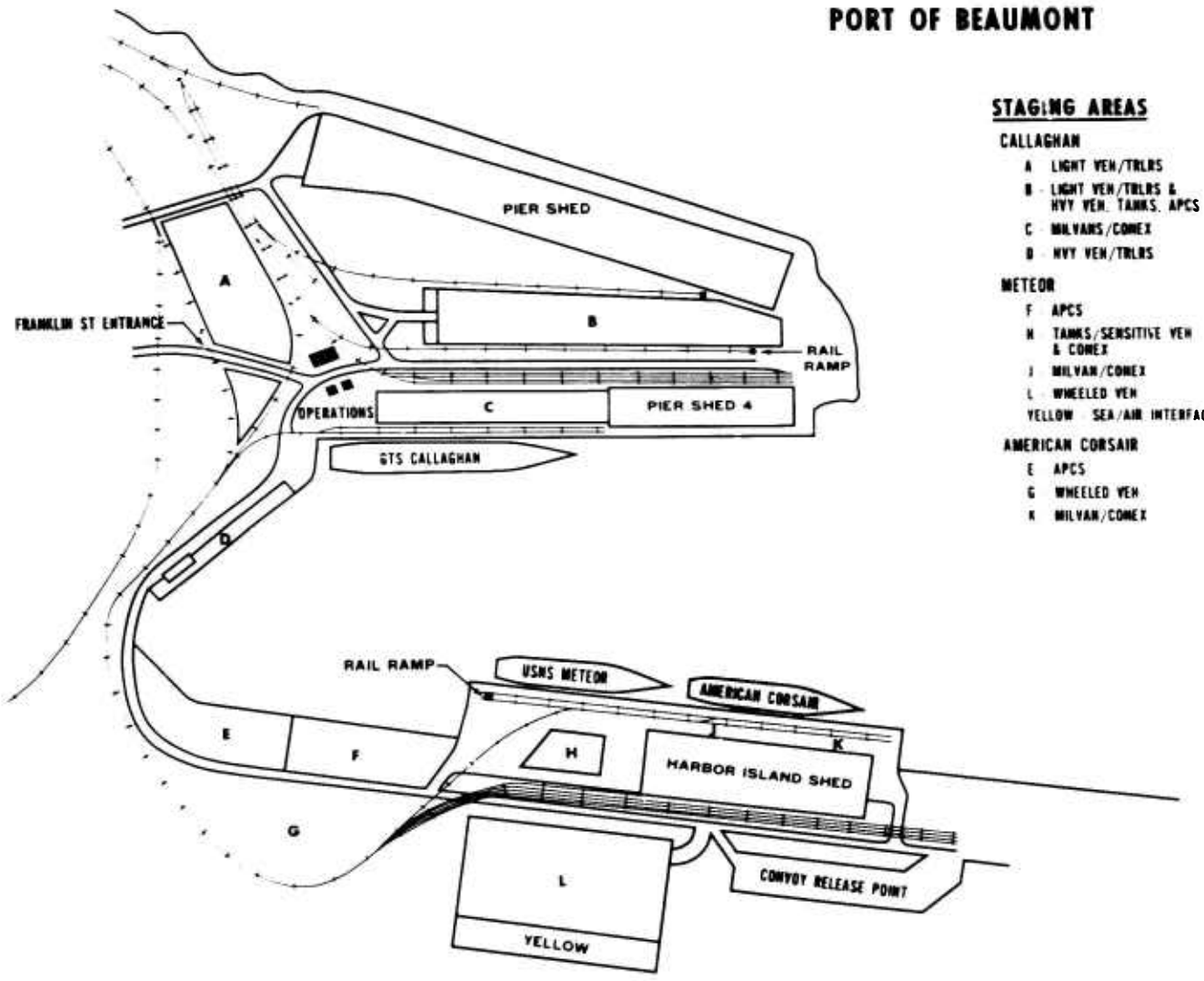


Figure 6-1. Port of Beaumont deployment phase.

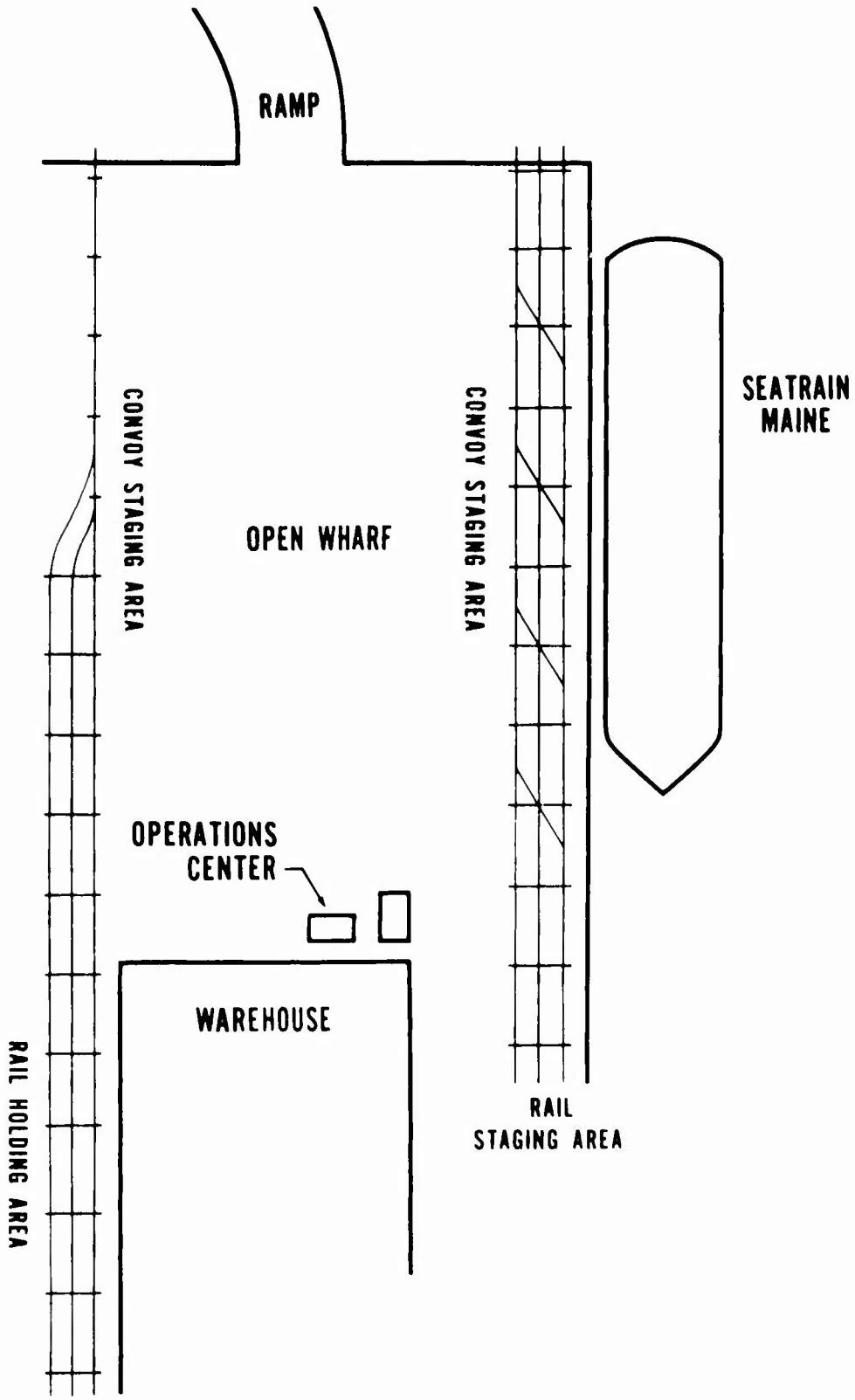


Figure 6-2. Port Arthur operations, deployment phase.

REFORGER TASK ORGANIZATION MTMCEA

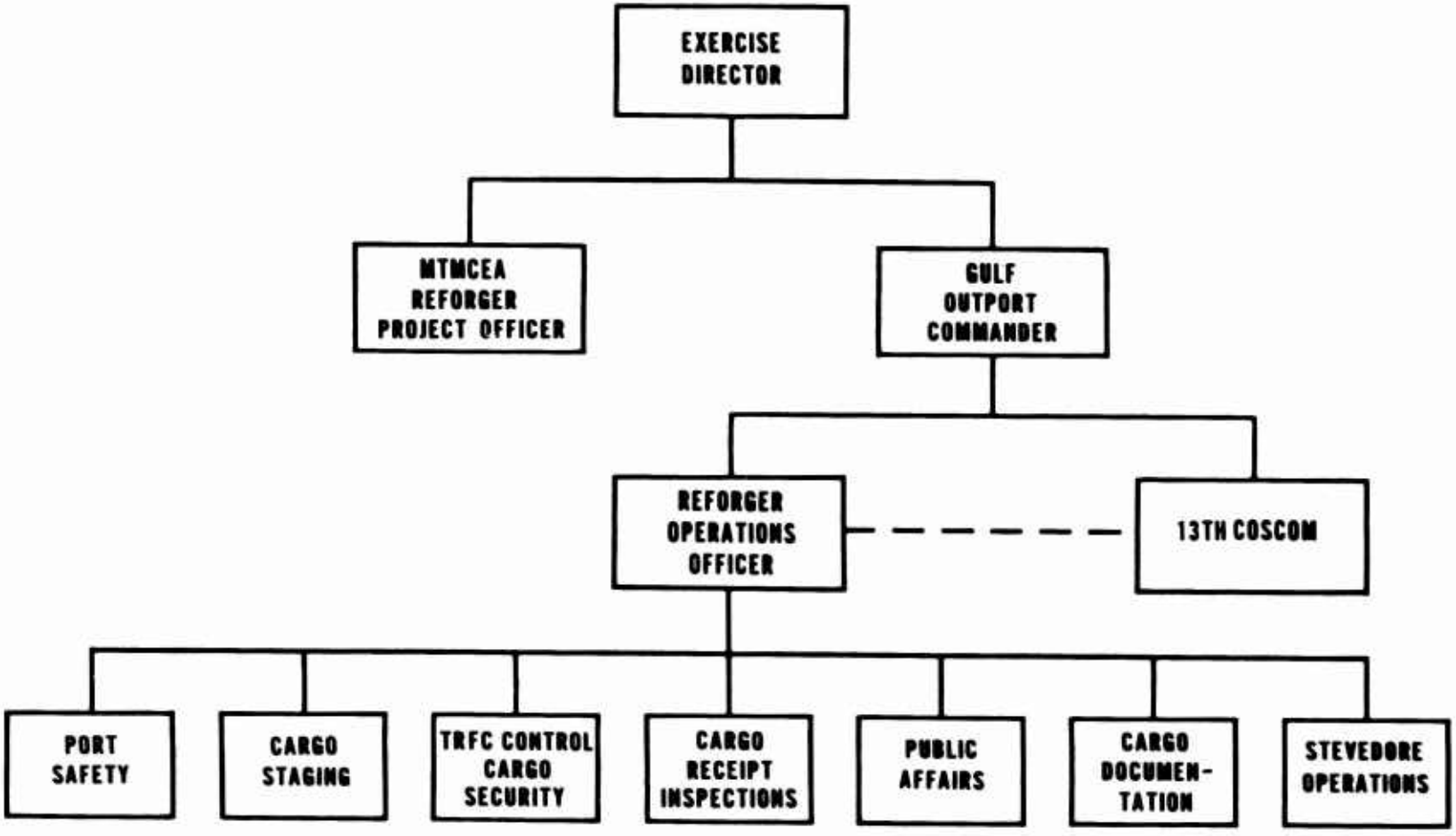


Figure 6-3. REFORGER task organization, MTMCEA.

c. REFORGER 79 was conducted as a peacetime exercise in which safety was the predominant consideration. For this reason, train arrivals at the Port of Beaumont were scheduled to insure complete offloading of one train prior to the arrival of the next.

d. At Beaumont, equipment was offloaded from line-haul conveyances by stevedores of the P. C. Pfeiffer Company; and, at Port Arthur, by the Flannigan Company.

e. Upon arrival at Beaumont, railcars were held in the rail-holding area adjacent to the port where they were divided into various segments for switching into the terminal for offloading. In the port, railcars were discharged utilizing both drive-off and lift-off methods. At Port Arthur, railcars were held on sidings at the terminal, then switched to the quay sidings for offloading of equipment onto the ship. The following discharge plan was utilized at Beaumont.

(1) Heavy tracked vehicles were offloaded circus fashion across the railcar end sills, without spanners, at the Main Street Wharf area (fig 6-4) and driven down a ramp constructed of railroad ties, at the Harbor Island Wharf (fig 6-5).

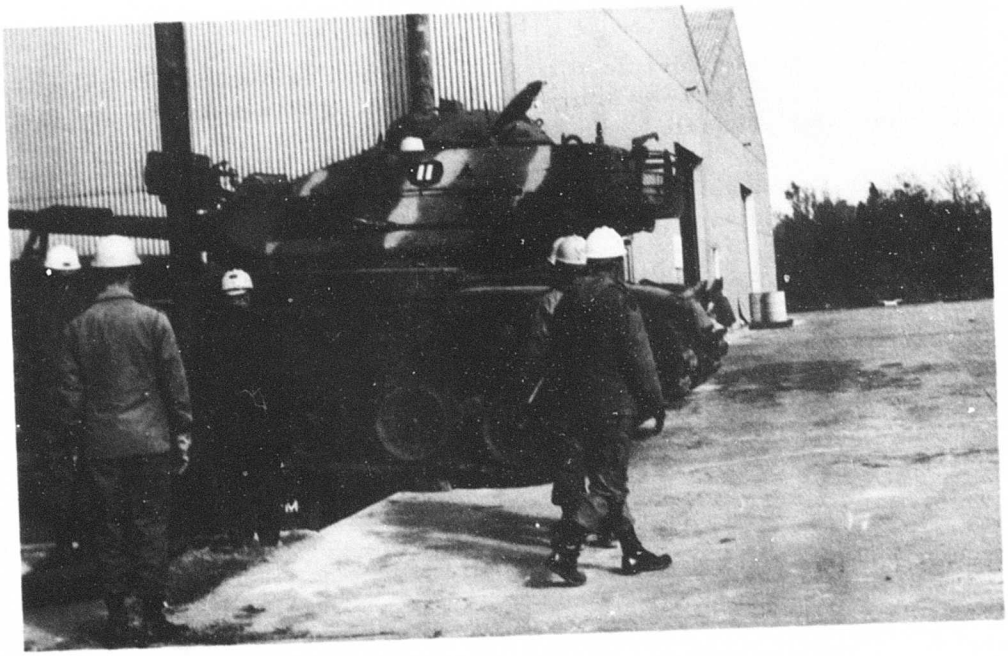


Figure 6-4. Rail offloading M60 tanks over endsill, Beaumont.

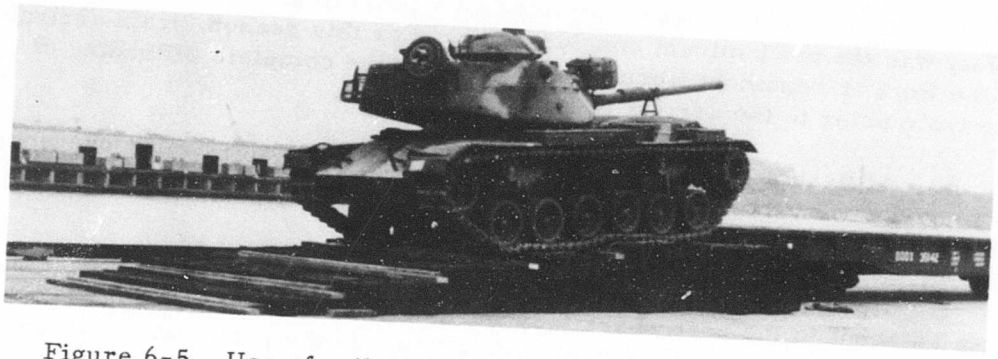


Figure 6-5. Use of railroad-tie ramp for heavy tracked vehicle offloading.

(2) Light tracked vehicles and all wheeled vehicles were offloaded circus fashion at both the Main Street Wharf and the Harbor Island Wharf, using a portable metal ramp.

(3) CONEXs, MILVANs, and other nonvehicular cargo were offloaded by mobile crane from gondola, flat, and TOFC cars.

f. Condition of trains upon arrival at Beaumont.

(1) All five Fort Hood trains arrived in outstanding condition, indicating that both post-level and MTMC training was effective and that supervision was adequate.

(2) Although no major equipment damage was noted, the Fort Riley train arrived with the following discrepancies:

(a) Approximately 50 percent of chain tiedowns were loose.

(b) Some vehicles had one chain tiedown missing, and at least two vehicles had both chain tiedowns at one end missing.

(c) Chain tiedown hooks were not wired shut as required by section 6 of AAR Open-Top Carloading Rules.

(d) Chain tiedowns on some 2-1/2-ton trucks were applied through bumperettes rather than through lifting shackles or over the frame.

(e) Chain tiedowns were applied to the front tow hooks of M880s in a crossed fashion, without these hooks wired closed. Failure to wire the hooks closed permits the chains to slip off the tow hooks if chains become slack.

(f) CONEXs secured in gondola cars were restrained by only two cables attached from each end CONEX to the side of the railcar. No shoring was used to fill empty spaces. Over 50 percent of these securing cables were broken and some CONEXs had shifted sideways. Internal cargo damage, if any, was not determined.

(g) Vehicles were improperly spaced on three flatcars, with only 4 inches of space between vehicles as opposed to the minimum of 12 to 18 inches normally allowed.

g. The Beaumont staging plan was well conceived and executed. It provided that equipment would be staged in lettered areas by ship and vehicle type, with each area divided into traffic lanes by vehicle type. It also provided for planned traffic flows, location of staging areas, and a color code system for each ship and its respective staging areas.

(1) TCMDs, prepared in advance and indicating the designated staging area for vehicles, were affixed to each vehicle upon receipt.

(2) Trains were offloaded and equipment was staged well in advance of the arrival of subsequent trains.

(3) Convoy arrivals were well coordinated. Upon arrival at the port, TCMD packets were affixed to each vehicle, showing staging locations.

h. A rail accident occurred at Port Arthur where three parallel sidings, A, B, and C, extend along the quay with a number of crossover switches located between them. A string of DODX flatcars, each flatcar loaded with two M60A1 tanks, was positioned on the quayside, siding A. A second string of DODX flatcars, each flatcar also loaded with two M60A1 tanks, was being switched from the rail-holding yard to siding B. This string of cars collided with the string of cars on siding A, because one of the crossover switches had not been properly positioned. Two railcars, one on each siding, impacted, causing damage to the four tanks loaded on them. The damage, however, was limited to turret travel locks on three tanks and a bogey wheel on one tank (fig 6-6).

3. Vessel loading.

a. General.

(1) Originally, the GTS Callaghan, USNS Meteor, USNS Comet, and SS Maine (ex-Seatrain) were designated for use in both deployment and redeployment phases of REFORGER 79. However, on 27 November 1978,

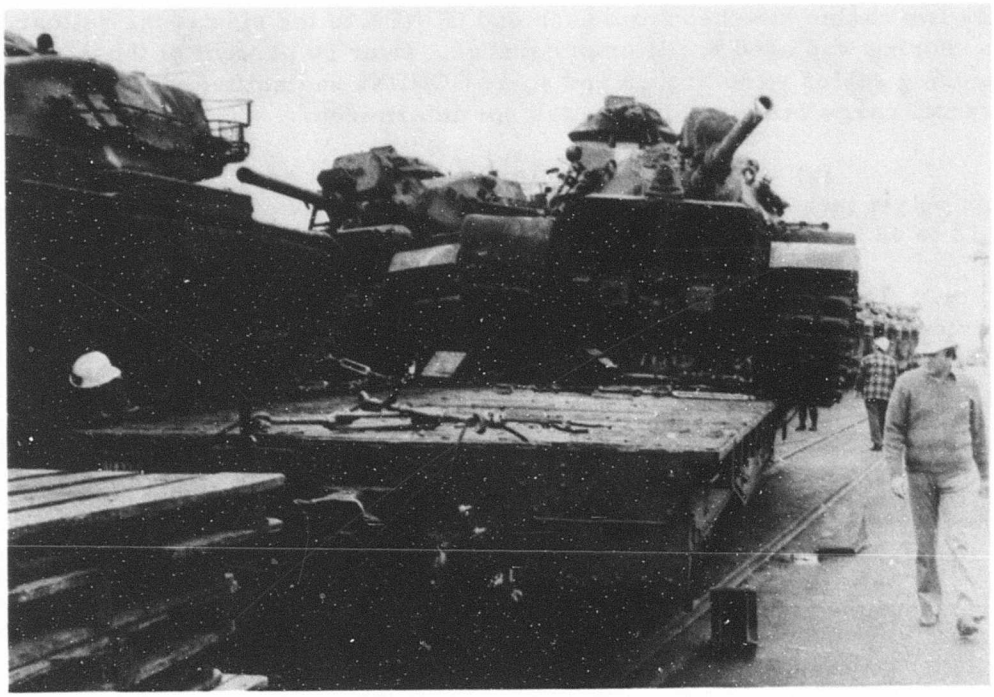


Figure 6-6. Rail accident, Port Arthur.

the USNS Comet was deadlined in Europe for boiler repairs and the SS American Corsair, a Challenger class C4 breakbulk ship, was substituted for use in the deployment phase only. The SS Maine (ex-Seatrain), a Ready Reserve Force vessel recently overhauled after being idle for 5 years, was tested during this exercise.

(2) Cargo prestow plans, and the more precise template prestow plans, were developed well in advance of scheduled outloading for the four vessels originally designated by MSC. These efforts insured that REFORGER equipment could be adequately stowed aboard the four designated ships (fig 6-7). The substitution of the SS American Corsair for the USNS Comet late in the planning phase necessitated that the template plans for the USNS Meteor and USNS Comet be redone and a prestow plan be developed for the SS American Corsair.

b. Shiploading operations.

(1) Shiploading operations commenced on 14 December 1978 and were completed on 30 December 1978, with a 3-day cessation of operations for the Christmas holidays. Exact loading times are contained in table 6-1.

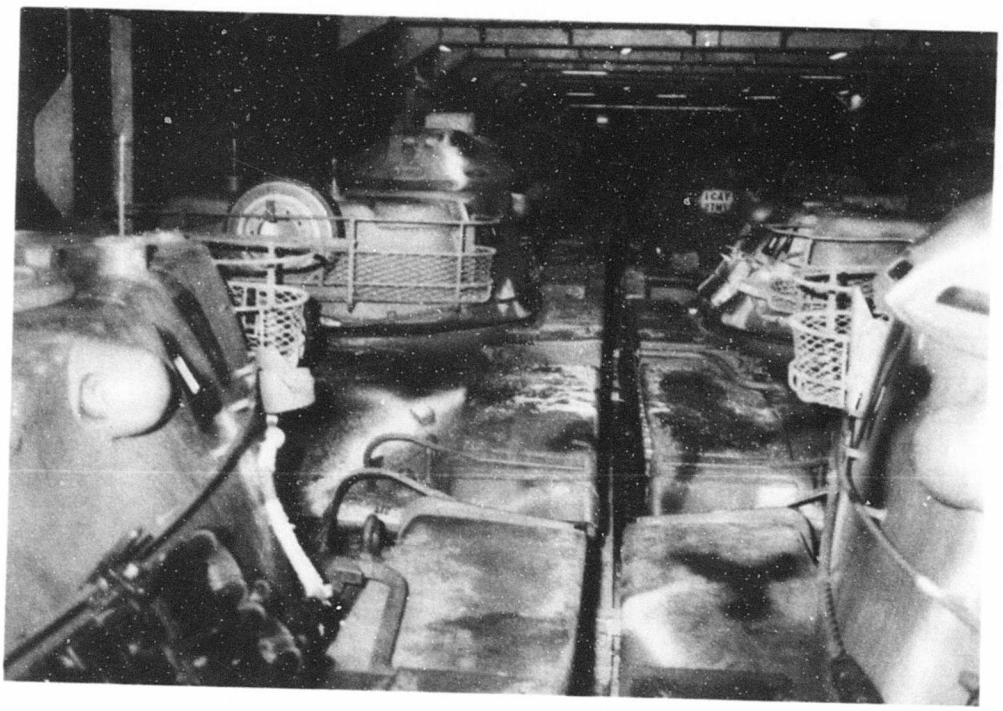


Figure 6-7. Tight stow, SS Maine (ex-Seatrain).

TABLE 6-1
DEPLOYMENT SPOE SHIPLOADING SCHEDULE

Vessel	Date on Berth	Start Operations	Cease Operations	Hours Elapsed Work Time	Man-hour Summary			Ship Sailing Time
					LOLO Gangs	RORO Gangs	Lashing Gangs	
American Corsair	13 Dec 78	0805 hrs, 14 Dec 78	2300 hrs, 18 Dec 78	112	3,368	0	2,371	0630 hrs, 30 Dec 78
USNS Meteor	17 Dec 78	1900 hrs, 17 Dec 78	2125 hrs, 19 Dec 78	504	662	900	1,439	1020 hrs, 30 Dec 78
SS Maine	18 Dec 78	0855 hrs, 18 Dec 78	2200 hrs, 21 Dec 78	85	1,736	0	1,963	2015 hrs, 27 Dec 78
GTS Callaghan	26 Dec 78	0700 hrs, 27 Dec 78	0740 hrs, 30 Dec 78	72.7	150	1,694	2,226	1600 hrs, 3 Jan 79

(2) Stevedoring operations were conducted under contract by Atlantic and Gulf Stevedores, Incorporated.

(3) Ships were berthed on a staggered basis, which permitted greater flexibility in the assignment of labor and supervisory personnel. The SS American Corsair berthed on 13 December at Beaumont's Harbor Island east wharf, which is well suited to breakbulk operations. The USNS Meteor berthed on 17 December at the Beaumont Harbor Island west

wharf, which accommodates side ramp RORO and breakbulk operations. The SS Maine berthed on 18 December at Port Arthur. This port is well suited for breakbulk loading, with direct railcar-to-ship loading made easy. A large staging area and a rail-mounted gantry crane are available. The GTS Callaghan berthed at Beaumont's Main Street wharf number 2 on 26 December. This wharf has stern and side ramp RORO capabilities. A 60-ton rail-mounted gantry crane is located directly adjacent to the wharf.

(4) As noted in paragraph 3a(2) above, the substitution of the SS American Corsair for the USNS Comet precipitated new prestow initiatives. This necessary since the calculated measurements of programed REFORGER cargo approximated the capacity of the ships originally scheduled for use. The substitution of the SS American Corsair added a new dimension. Even with this prestow planning, some portions of the GTS Callaghan and USNS Meteor cargo had to be restowed during loading operations, to insure that all cargo could be accommodated.

(5) Cali-forward procedures for equipment loading were excellent and well planned, with instant relay of equipment requirements from ship to staging area by hand-held two-way radios.

(6) Military personnel, rather than contract stevedores, drove tracked vehicles. Wheeled vehicles were driven by stevedores.

(7) Area stevedores were guaranteed overtime, at premium pay, based upon a planned work schedule of 0700 to 2300 hours daily, in exchange for an agreement to continue work in all but heavy rain. This agreement worked well for both parties, and work was halted only once during outloading.

(8) Cargo aboard the SS American Corsair and the SS Maine was lashed and shored (versus only lashing on RORO ships) to provide the maximum amount of cargo stability (fig 6-8) during the winter crossings of the North Atlantic Ocean and North Sea. This procedure required extra time and effort, but, based on sea conditions during December, was considered a necessary precaution.

c. SS American Corsair loading.

(1) The SS American Corsair was loaded using ship's gear for lifting cargo into all cargo holds and onto the main deck, with all six holds working simultaneously (lashing and shoring operations were conducted in one hold while an adjacent hold was being loaded).

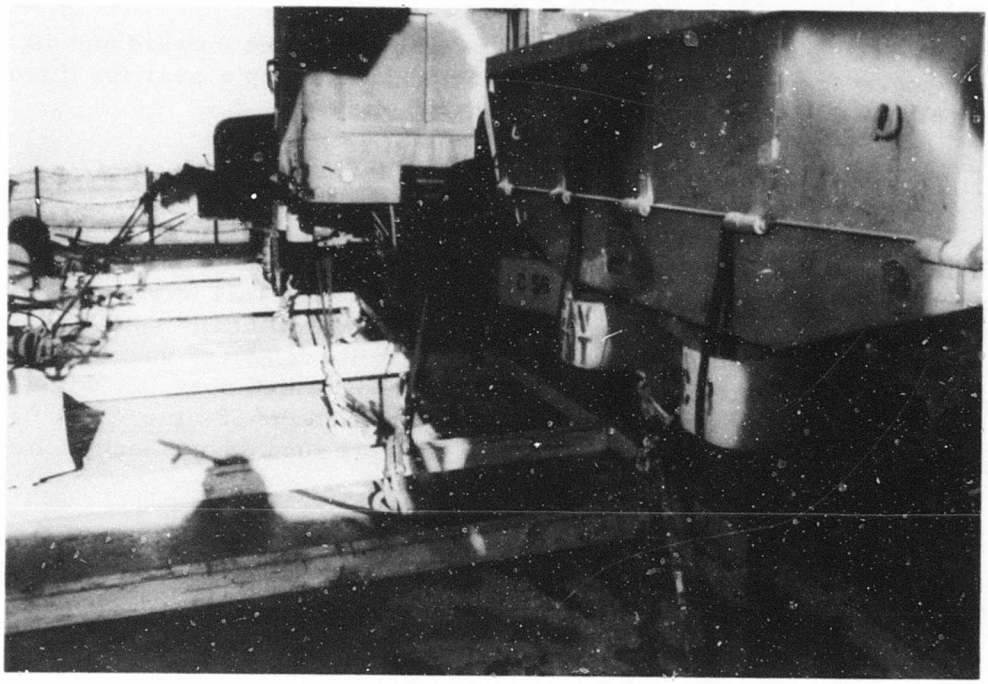


Figure 6-8. Lashing and shoring of cargo on SS Maine (ex-Seatrain).

(2) Longshore gangs were used as indicated in table 6-1.

(3) Heavy rain caused a cessation of operations on 15 December from 1200 to 1900.

(4) A faulty winch gear on the number 4 hatch boom caused a cable to break while lifting an M113A1 into that hold. The vehicle was dropped about 5 feet onto the hatch cover of the lower tween deck; however, damage was limited to two road wheels and one shock absorber.

(5) It became apparent during loading operations that the SS American Corsair could accommodate more cargo than had been planned for her. Ten M113A1s, thirty M15A1s, and thirty 1/4-ton trailers designated for stowage aboard the USNS Meteor were then loaded aboard the SS American Corsair.

(6) Planned stow was 8, 524 measurement tons. Actual stow was 9, 649 measurements tons.

d. USNS Meteor loading.

(1) The USNS Meteor was loaded by using the forward and aft side ramps for roll-on/roll-off operations and the ship's gear for lift-on operations into hatches 1 and 2 and for deck stowage.

(2) Longshore gangs were used as indicated in table 6-1.

(3) Loads planned for lower decks were not completely attained, since these holds have relatively low overhead clearances and an adequate supply of low clearance vehicles was not available. This was caused in part by vehicles arriving from installations in operational, instead of reduced, height configuration. Also, low-profile vehicles, such as M113A1s, 1/4-ton trucks, and 1/4-ton trailers, which normally would be stowed in the lower holds, had been loaded aboard the SS American Corsair. In retrospect, higher profile vehicles should have been shifted to the SS American Corsair.

(4) A tighter stow might have been achieved on the upper decks had 1/4-ton trailers been available for use as fill cargo for small unused spaces.

(5) Extra time was required for stowing equipment in the number 4 upper tween deck, as the last pieces of cargo were difficult to fit into the remaining space of this last hold to be loaded.

(6) The planned load was 15,460 measurement tons. The actual load was 14,966 measurement tons.

e. SS Maine (ex-Seatrain) loading.

(1) Vessel loading was accomplished using a shore crane for lift-on operations into the hold, and on the main and spar decks. Additionally, the ship's two 45-ton cranes assisted in loading cargo onto the spar decks. Equipment arriving by rail was lifted directly from railcars on quay rail sidings to the ship, thus reducing cargo handling requirements.

(2) Longshore gangs were utilized as shown in table 6-1.

(3) On 22 December, the ship's forward crane became inoperable due to brake failure. Since repair parts were not readily available, crane repairs were delayed pending ship arrival in Europe. No significant delays resulted from this incident.

(4) Some difficulty was encountered in offloading equipment directly to the ship from railcars on the quay. As railcars were unloaded,

they were not moved from beneath the shore crane until all cars in the string were emptied, thus slowing the operation. To overcome this difficulty, the crane moved to a loaded railcar, picked up a piece of cargo, moved back to the hatch, and lifted the cargo into the hold. It was a time-consuming operation. A more efficient railcar switching system should be devised if quay side rail offloading is to be conducted at Port Arthur in the future.

(5) About the time the ship was 50-percent loaded, a conflict arose between the USCG and MSC concerning the stowage of vehicles with battery cables connected. The Military Sealift Command stated that it considered the ship to be a breakbulk vessel, and therefore all vehicle batteries must be disconnected. Since the ship was half loaded, any effort to disconnect battery cables would require offloading some vehicles, especially M60 tanks, since the turrets would have to be rotated to gain access to battery compartments. Upon learning of this problem, the MTMC Gulf Outport Commander contacted the Coast Guard and escorted the Coast Guard Captain of the Port of Port Arthur aboard the ship. The Coast Guard declared the SS Maine to be a vehicle-carrying vessel, with sufficient ventilation and fire-fighting equipment in the holds to preclude the requirement that vehicle batteries be disconnected. It is necessary that all agencies concerned agree on ship-loading rules prior to planning the use of certain vessels.

(6) While loading containers on the spar decks of the SS Maine, it was learned that the quantity of container-securing pins was not sufficient to accommodate the planned load. Sufficient container-securing pins were located aboard the SS Washington, berthed nearby, to satisfy the requirement. Sufficient quantities of container pins should be available aboard Seatrain-type vessels to accommodate all container fittings.

(7) In anticipation of tracked-vehicle loading aboard the SS Maine, special spreader bars were fabricated by MSC to permit the use of the ship's two cranes for heavy lifts. A tandem lift was made using these spreader bars, when an M60 tank was loaded aboard the SS Maine (fig 6-9). Heavy-lift spreader bars should be made part of all Seatrain type vessels' ship's gear to enhance the self-sustaining capabilities of these ships.

(8) A number of convoy vehicles staged at Port Arthur were found with unsecured items in truck and trailer cargo beds. These items were unloaded, consolidated, and secured, at considerable expense in time and effort, by 13th COSCOM personnel. Shipping units must insure that all cargo loaded aboard trucks and trailers, such as side boards, tarps, extra parts, and so forth, is properly loaded, secured, and inspected prior to shipping.

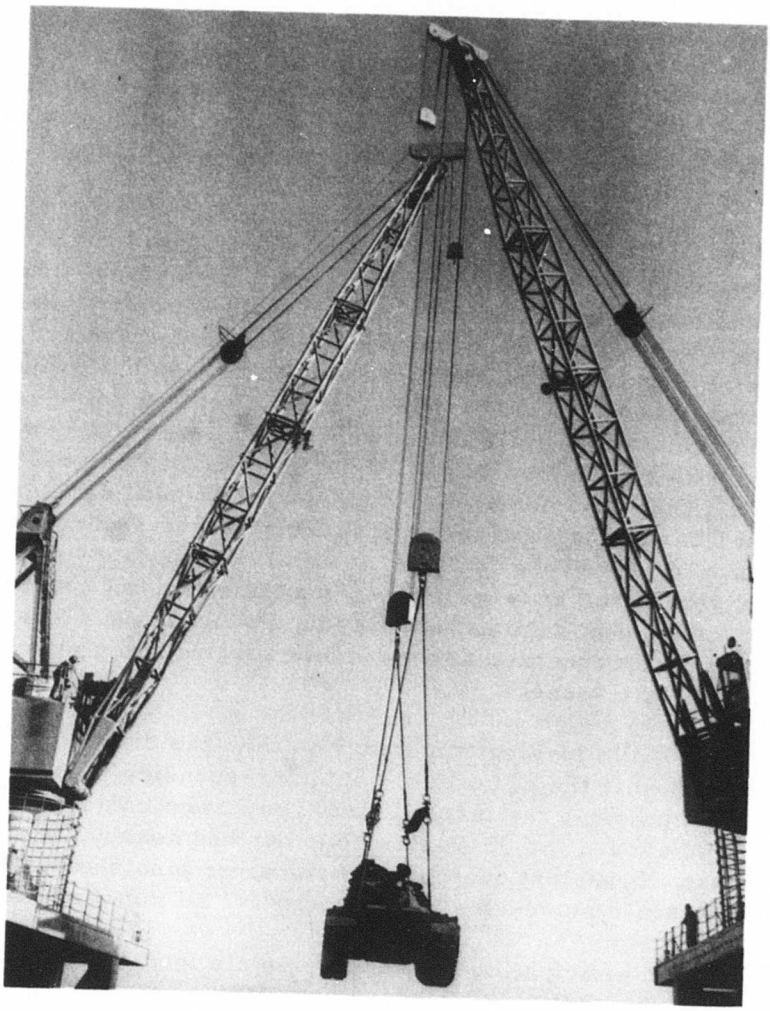


Figure 6-9. SS Maine (ex-Seatrain) ship's cranes used in tandem to lift M60 tanks.

(9) The planned load for the SS Maine was 10,007 measurement tons. The actual load was 11,407 measurement tons.

f. GTS Callaghan loading.

(1) The GTS Callaghan was loaded by using the stern ramp and both port side ramps for roll-on/roll-off operations, the ship's gear for lifting cargo into the number 1 upper tween deck, and a shore crane for deck loading.

(2) Longshore gangs were utilized as depicted in table 6-1.

(3) After the first day of roll-on loading, the stern ramp became unusable as the ship settled in the water. Subsequently, the aft side ramp became unusable; however, no clearance problems were encountered with the forward side ramp.

(4) On the third day of loading, the GTS Callaghan listed heavily to port as more equipment was stowed on the port side than on the starboard side. The ship listed even more severely to port whenever a heavy vehicle was driven up the side ramp. This caused the ship to rest against the shore crane that was loading on-deck cargo. The list problem was subsequently corrected by stowing more equipment on the starboard side of the vessel. Stowage should be planned to insure a slight outboard list to compensate for the port list caused by vehicles rolling aboard side ramps.

(5) Some difficulty was encountered in moving trailers about the ship and in positioning them for stowage. A yard hustler/Walter's tractor with a fifth wheel should be available to move stake and platform trailers, M250 vans, and other fifth-wheel-equipped trailers onto and within the ship.

(6) The planned load was 23,971 measurement tons of cargo. The actual load was 27,883 measurement tons of cargo.

(7) Deck loading of equipment was required on the number 1 hatch when programmed equipment could not be accommodated in other portions of the vessel. (Cargo is not normally loaded as far forward on the open deck in winter because rough seas and ocean spray may result in cargo damage.)

4. Cargo securement. Wheeled and tracked vehicles are normally secured aboard RORO vessels utilizing peck and hale gear. This securement method is for the most part efficient and effective, but requires that attaching devices compatible with the peck and hale gear be available on the vehicles being stowed. During this REFORGER, as with past REFORGER exercises, a considerable number of vehicles arrived at the SPOE without shackles having been installed at their designated towing and tiedown points. Also, the wire-rope-loop substitutes mentioned in paragraph 4c(10), section IV, are not compatible with peck and hale gear. Transportability doctrine included in transportability guidance technical manuals requires that shackles be installed on most vehicles at rail outloading points. These shackles are compatible with peck and hale gear and therefore can be used for shipboard stowage. To accommodate the

use of peck and hale lashing gear during RORO shiploadings at Beaumont and Port Arthur, approximately 1,600 commercial equivalent shackles were locally procured and installed on military vehicles. Although many different types of vehicles were missing shackles, the most noticeable was the M113-series tracked vehicles. (As mentioned previously, these vehicles have BILI towing or T-shackles that are incompatible with both rail and shipboard tiedown procedures. These T-shackles must be replaced with approved shackles (clevis-assembly, suspension, bolt-and-nut type) to achieve effective securement.)

5. Summary and recommendations.

a. Call forward, receipt, staging, segregation, and loading of REFORGER equipment was well planned and executed, with minimum equipment damage.

b. The following recommendations are made:

(1) If the port of Port Arthur is to be utilized in future REFORGER-type operations, a more efficient railcar switching system be devised to facilitate quayside rail offloading.

(2) Shipping units insure, prior to departure of equipment from home station, that all cargo loaded aboard trucks and trailers is properly loaded and secured. Vehicles must be reduced in height for shiploading in accordance with AR 220-10.

(3) Side ramp loadings of the GTS Callaghan be planned to allow for an outboard list to compensate for the weight of vehicles rolling aboard over the side ramps.

(4) A yard hustler or other tractor with a fifth wheel be made available for moving fifth-wheel-equipped trailers aboard and within the GTS Callaghan.

(5) Shipping units insure that proper shackles are installed at vehicle towing and tiedown points to facilitate both rail and shipboard securement.

(6) All Seatrain-type vessels be outfitted with sufficient quantities of container pins to accommodate all container fittings. Also, these vessels have, as a part of the ship's gear, heavy-lift spreader bars. These measures will enhance the self-sustaining capabilities of these ships.

SECTION VII

SPOD OPERATIONS--EUROPE

1. General.

a. A primary objective of REFORGER 79 was to exercise technical agreements involving the BENELUX line of communications under the host-nation support concept. European SPOD operations were essentially a host-nation activity, performed by local contractors under the direction of MTMC TTGE, MTMC BENELUX Terminal, and host-nation military port authorities. Technical assistance, liaison, documentation, and contract supervision were provided by MTMC BENELUX terminal to the Belgian and Royal Netherlands Armies for the reception, discharge, and port clearance of REFORGER cargo (fig 7-1). The GTS Callaghan was discharged in Amsterdam, the Netherlands, and the USNS Meteor, SS American Corsair, and SS Maine were discharged in Antwerp, Belgium.

b. Command and control of SPOD operations were exercised jointly by the two host nations and MTMC TTGE (figs 7-2 and 7-3). An MTMC TTGE operations center was open in Amsterdam from 15 through 25 January, and an MTMC TTGE operations center was open in Antwerp from 15 through 24 January.

c. The MTMC BENELUX terminal was augmented by four teams from CONUS. The 160th Contract Supervision Team and the 358th Cargo Documentation Team from the 7th Transporation Group (Terminal), Fort Eustis, Virginia, assisted at Antwerp. The 140th Contract Supervision Team and the 172d Cargo Documentation Team from the 13th Corps Support Command, Fort Bragg, North Carolina, assisted at Amsterdam. Ideally these teams would assume almost entire responsibility for contract supervision, assistance, and documentation that are their assigned contingency missions. Unfortunately, unique REFORGER requirements and peacetime constraints inhibited full team utilization. However, the involvement and responsibilities of the teams were much greater than in past REFORGERs, and were more representative of their true capabilities.

d. The 1st Movements Region, 4th Transportation Brigade, through TMO Rotterdam, was responsible for planning and execution of port clearance by rail. This arrangement proved satisfactory and was a great improvement over the port clearance of previous REFORGER exercises when rail planning was divided between the 1st and 2d Movements Regions. Port clearance for sea/air interface cargo and military convoy was accomplished by the 2d Movements Region. While bad weather hampered their efficiency, port clearance by convoy would have been enhanced by additional control personnel.

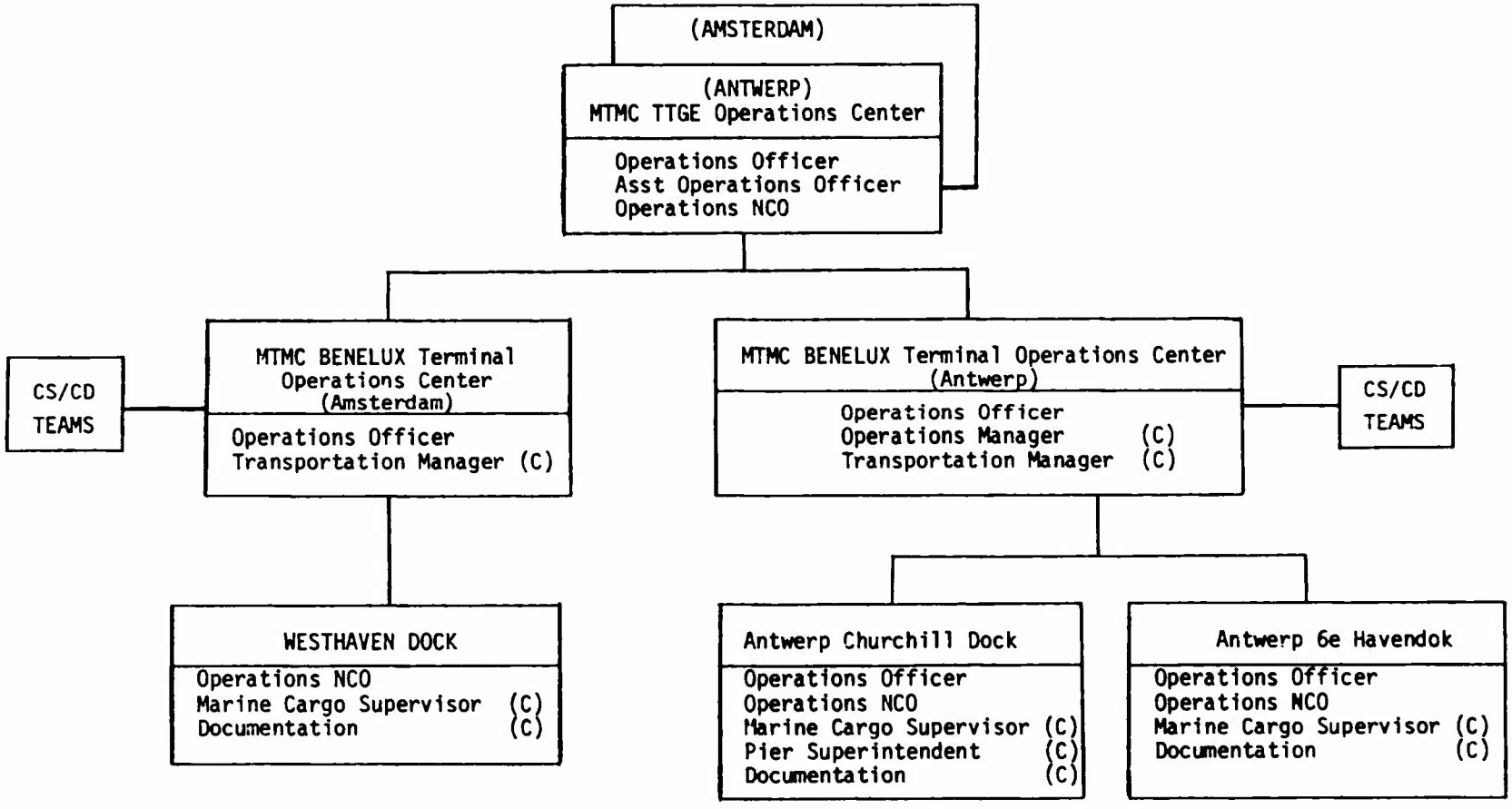


Figure 7-1. MTMC TTGE REFORGER operations organization.

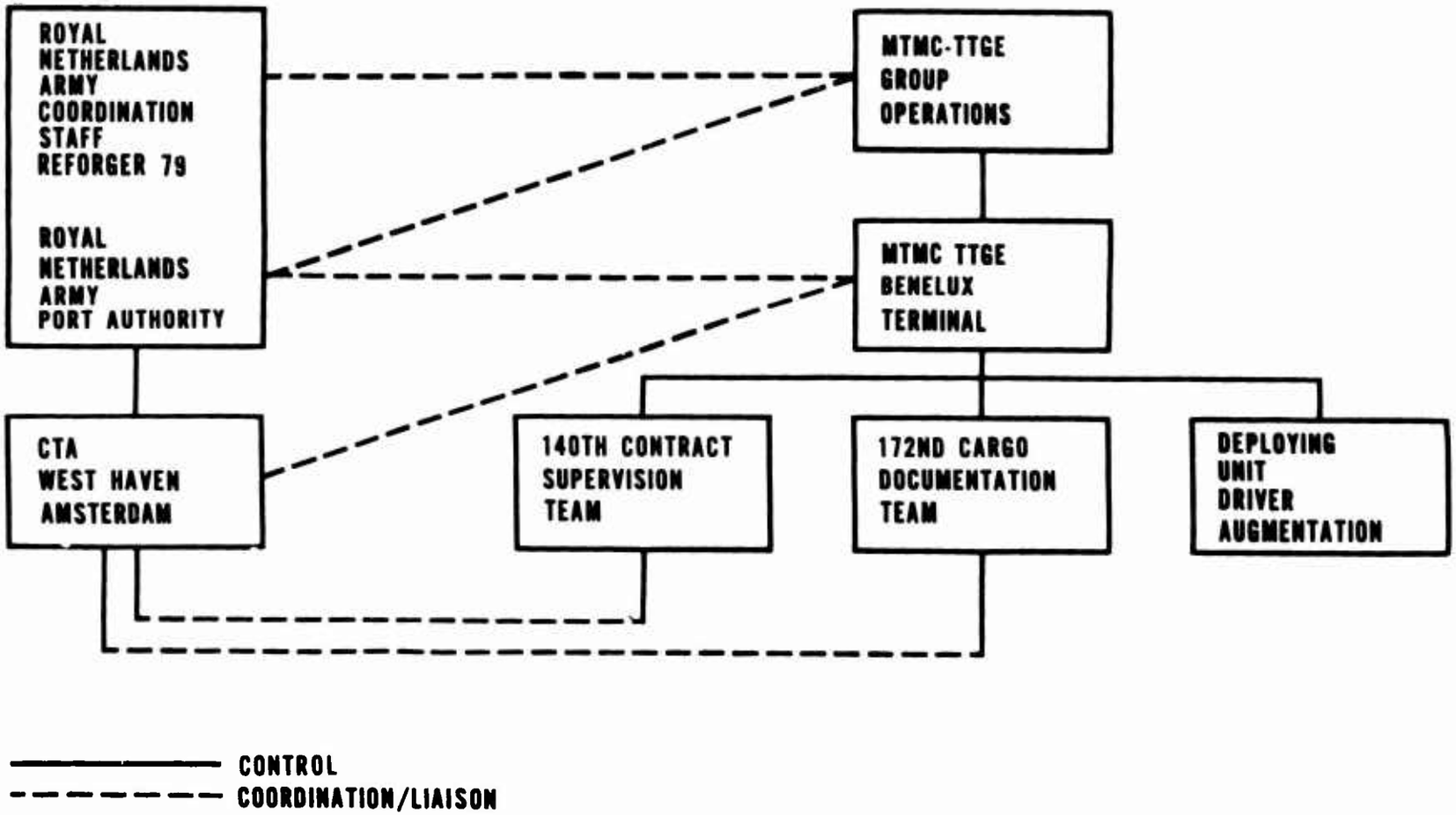


Figure 7-2. MTMC TTGE and Belgian organizational structure.

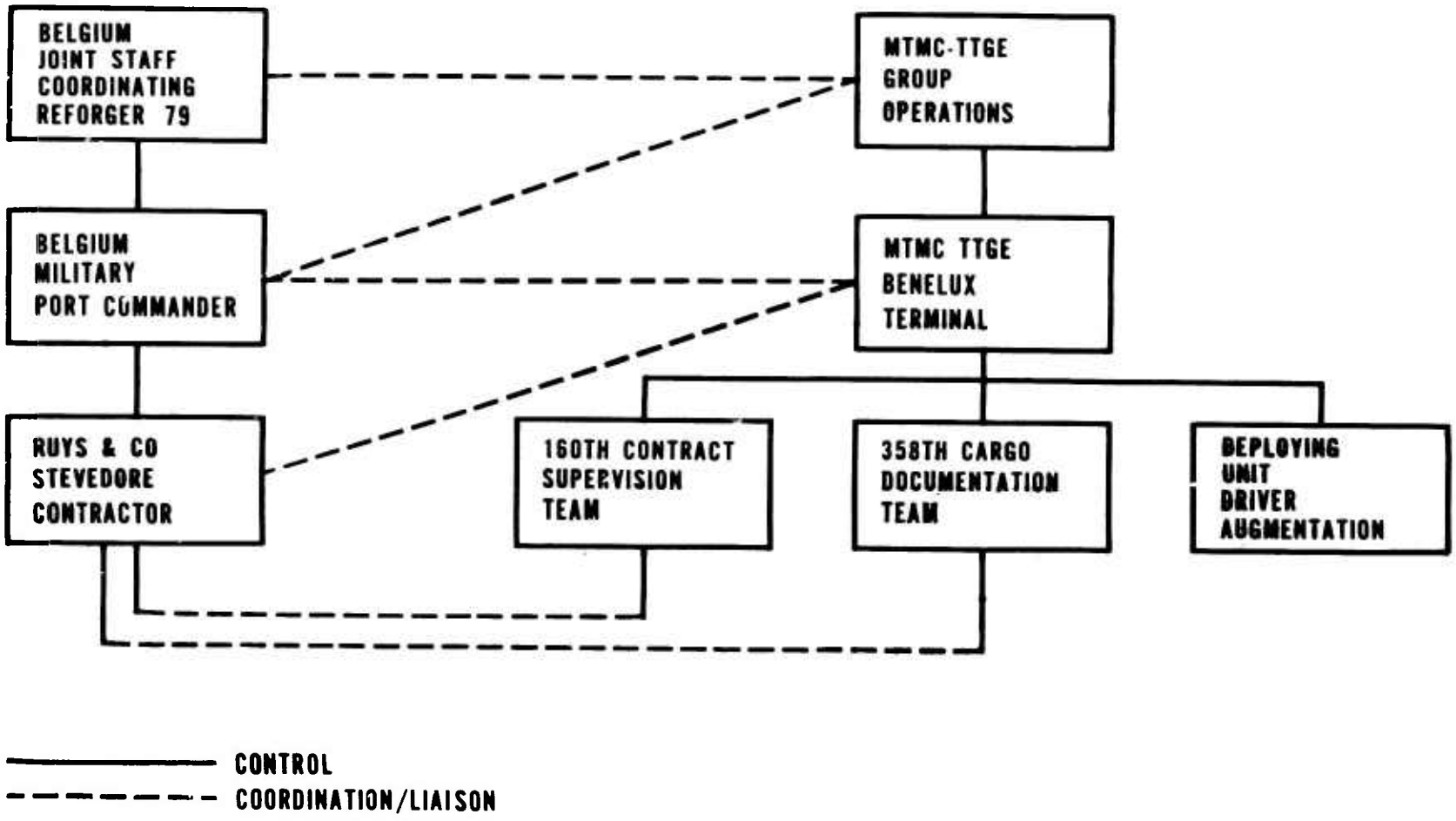


Figure 7-3. MTMC TTGE and the Netherlands organizational structure.

e. Three maintenance contact teams were provided by the 21st Support Command. One team was assigned to Amsterdam and the other two to Antwerp. Each team was equipped with an M151 1/4-ton truck with trailer, tool boxes, and slave cables and batteries wired for starting vehicles. Teams fixed flat tires, started dead vehicles and made minor repairs. The severity of the weather greatly taxed the capabilities of the teams. Not only did a large percentage of the vehicles require starting assistance during discharge, but many required additional assistance in the staging areas. There were insufficient personnel to work concurrently onboard ship and in the staging areas. Additionally, the teams had no tank mechanics and insufficient quantities of tow bars and slave cables.

f. Driver support came from the deploying units. A 40-man driver support element was used at Amsterdam and a 70-man element at Antwerp. All drivers were to be both track and wheel qualified, with one-half to be qualified as mechanics. The deploying unit did not provide the skills requested, as many of the drivers were not dual qualified. This caused discharge delays while a qualified driver was located to move a specific piece of equipment. A problem occurred in Antwerp when one driver element was given two separate missions: port operations (discharge, staging, and rail loading) and port clearance (convoy operations) to the major convoy staging area in Haasdonk, 45 kilometers away. The demands of these missions were frequently in conflict, causing delays in convoy departure or inadequate support of port operations. Many drivers worked 18 hours or more a day to meet all demands.

g. European SPOD documentation was accomplished in accordance with modified MILSTAMP procedures and standard NATO (STANAG) documentation agreements. STANAG documentation commenced with MTMC TTGE and host-nation receipt of the STANAG sailing signal 2166 from MTMCEA. The remaining STANAG documentatation (STANAG 2156 for cargo clearing the port by rail and STANAG 2155 for cargo clearing by highway) was the responsibility of the movements control activities of the host nations and the US 4th Transportation Brigade liaison element. The bulk of the documentation effort was accomplished by the documentation contractor, assisted by the two documentation teams from CONUS. Of particular interest was the internal control procedure of the BENELUX terminal, which facilitated checking and documentation. A cargo list was prepared for each ship by unit and vehicle type, listing each vehicle by a sequential number called a post number. This number was chalked on each vehicle prior to discharge, which expedited cargo checking. A more detailed discussion of documentation procedures is in section XII.

h. During the ocean voyage, no apparent damage occurred to equipment stowed aboard the SS Maine and the SS American Corsair. An M880 1-1/4-ton truck and an M151 1/4-ton truck were damaged aboard the

USNS Meteor. A chain link in the peak and hale gear securing the M880 failed, causing the M880 (loaded with a communications shelter) to pitch against the M151, damaging both vehicles. The M880 had been stowed athwartship and secured with four lashings; however, the handbrake had not been set. Additional lashings and application of the brake might have reduced or prevented the damage. (Athwartship stowage of vehicles, while not prohibited, is generally considered less acceptable than fore-and-aft stowage. In retrospect, this M880, loaded with a communications shelter, was not a good candidate for athwarship stowage.) Also, numerous incidents of noncompliance with standard procedures for securing the M880 occurred. An M35A2 2-1/2-ton truck with a broken torsion bar was noted aboard the GTS Callaghan. The vehicle had been properly secured, and the cause of the damage was unknown. No significant cargo damage occurred during vessel discharge.

i. Three armored vehicle launch bridges (AVLB) were removed from their tank chassis and shipped separately. Although AVLBs can be shipped by rail in CONUS, they are outsized to European railroads. To be shipped by rail in Europe, the AVLBs must be longitudinally disassembled. Since they were not disassembled, special transportation had to be hurriedly arranged. The one AVLB discharged in Amsterdam was moved by barge, and the two in Antwerp were moved by commercial truck.

j. Another primary objective of REFORGER 79 was to exercise participants under cold weather conditions. This objective was certainly attained. Vessel discharge and port clearance were hampered by freezing temperatures and snow and ice storms. Discharge was impeded because over 60 percent of the vehicles would not start. Most were eventually started; however, similar problems occurred again in the staging areas. Vehicles that did not start were towed to staging areas and lifted or towed aboard railcars. Vessel discharge, although impeded, was accomplished within an acceptable time. More serious problems occurred during staging and railcar loading. Ice and snow had to be cleared from railcars, loading ramps, and, in some cases, railroad tracks, thus slowing rail outloading and delaying port clearance operations. Starting problems delayed scheduled convoys. The effect of adverse weather on operations is discussed in detail in section XIII. Arrival and discharge times are in table 7-1.

2. Amsterdam port operations.

a. The GTS Callaghan was berthed at 1612 hours, 16 January 1979, in Amsterdam at Combined Terminals Amsterdam, West Haven. These facilities are shown in figure 7-4. To expedite discharge, unlashing and prechecking began at 1800, 16 January 1979.

TABLE 7-1
SPOD VESSEL DISCHARGE

Vessel	Date on Berth	Start Operations	Cease Operations	Hours Elapsed Work Time
GTS Callaghan	1612 hrs, 16 Jan 79	0750 hrs, 17 Jan 79	2211 hrs, 18 Jan 79	31
USNS Meteor	2151 hrs, 16 Jan 79	0600 hrs, 17 Jan 79	1700 hrs, 18 Jan 79	26
SS Maine	2326 hrs, 15 Jan 79	0600 hrs, 17 Jan 79	1635 hrs, 19 Jan 79	41
SS American Corsair	1300 hrs, 17 Jan 79	0600 hrs, 18 Jan 79	1630 hrs, 19 Jan 79	26

b. Vessel discharge (table 7-1) and rail loading was conducted on a two-shift basis from 0730 to 1600 hours and from 1630 to 0045 hours. Discharge began on 17 January at 0750 hours. A short crane was used to lift off deck-stowed cargo and CONEXs. The stern ramp was used for RORO operations. The vessel had been loaded to facilitate discharge using the forward side and stern ramps; however, the forward side ramp could not be used since it blocked the rail tracks on the quay. While this created some difficulties, it did not significantly delay discharge. The 40-man driver-support element was divided into two shifts to coincide with the stevedore shifts. Drivers staged the vehicles by type in two areas prior to rail loading. Discharge was completed at 2211 hours, 18 January.

c. Initially, vessel discharge and rail loading were concurrent, with 2 of 13 trains loading during discharge. CONEXs were loaded directly from the vessel to railcars. Vehicles that would not start were towed off the ship and then loaded onto railcars with the shore crane. Vehicles that did start were loaded, using three mobile ramps provided by the Royal Netherlands Army. Although the ramps were built up to reduce the angle between the top of the ramp and the edge of the railcar, the landing legs of tractor-trailer combinations (12-ton stake and platform trailers and 5,000-gallon petroleum trailers) would not clear (fig 7-5).

Rather than lift these tractor-trailers onto railcars and create similar problems during rail unloading, 12 vehicles were convoyed, on 25 January, to Zolder, Belgium, to link up with the last convoy from Haasdonk, Belgium, to Boeblingen, Germany. Although many of the railcars were lashed and blocked in the port area (fig 7-6) to alleviate congestion on the quay, some were moved to railcar holding areas to complete securing.

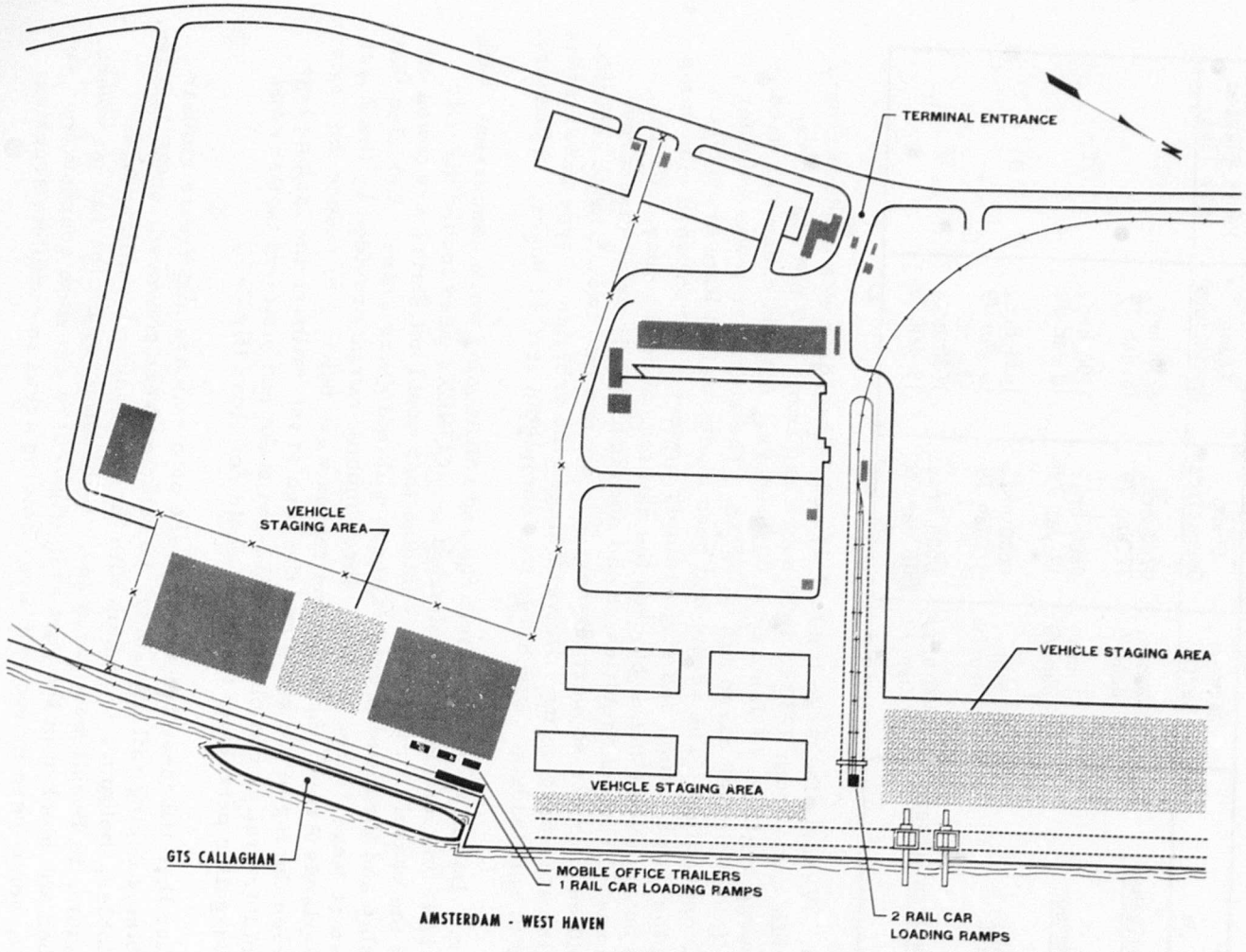


Figure 7-4. Combined terminals Amsterdam.

Rail loading was seriously slowed by harsh weather, particularly by a severe ice storm on 20 January. The loading of 13 trains at Amsterdam was not completed until 25 January.

Figure 7-5. Mobile Netherlands Army ramp would not accommodate tractor-trailer combinations.

3. Antwerp port operations.

a. Port operations at Antwerp were conducted at two separate locations (fig 7-7). Hessenate-Neptunes B.V. at Churchill Dock was the site of the MTMC TTGE operations center and the site for the discharge of the USNS Meteor (berth 408) and the SS American Corsair (berth 404). The SS Maine was discharged at 6e Havendok, Noord Natie S.V. (berth 320).

Figure 7-6. Lashing and blocking railcars.

b. The host nation used a general agent to coordinate the services of the two operating stevedore contractors in Antwerp. This agent served as a point of contact for all contract matters and requirements. During REFORGER 78 a similar arrangement was successful; however, during REFORGER 79 the performance of the general agent was marginal. The majority of the detailed arrangements required direct coordination with the two stevedore contractors.

c. Two troop support problems occurred at Antwerp that increased fatigue and impacted on ship discharge and port clearance.

(1) The troop billeting area was located approximately 30 kilometers from the port. Severe weather-related road conditions often caused one-way travel to exceed 1-1/4 hours and caused personnel to be late for work. Administrative time for personal hygiene, area cleanup, and travel time, added to the 0600-2200 hour work schedule at the port, left little time for sleep. Although an 0430-hour breakfast was available to the supporting military personnel, most chose to miss breakfast to get additional sleep.

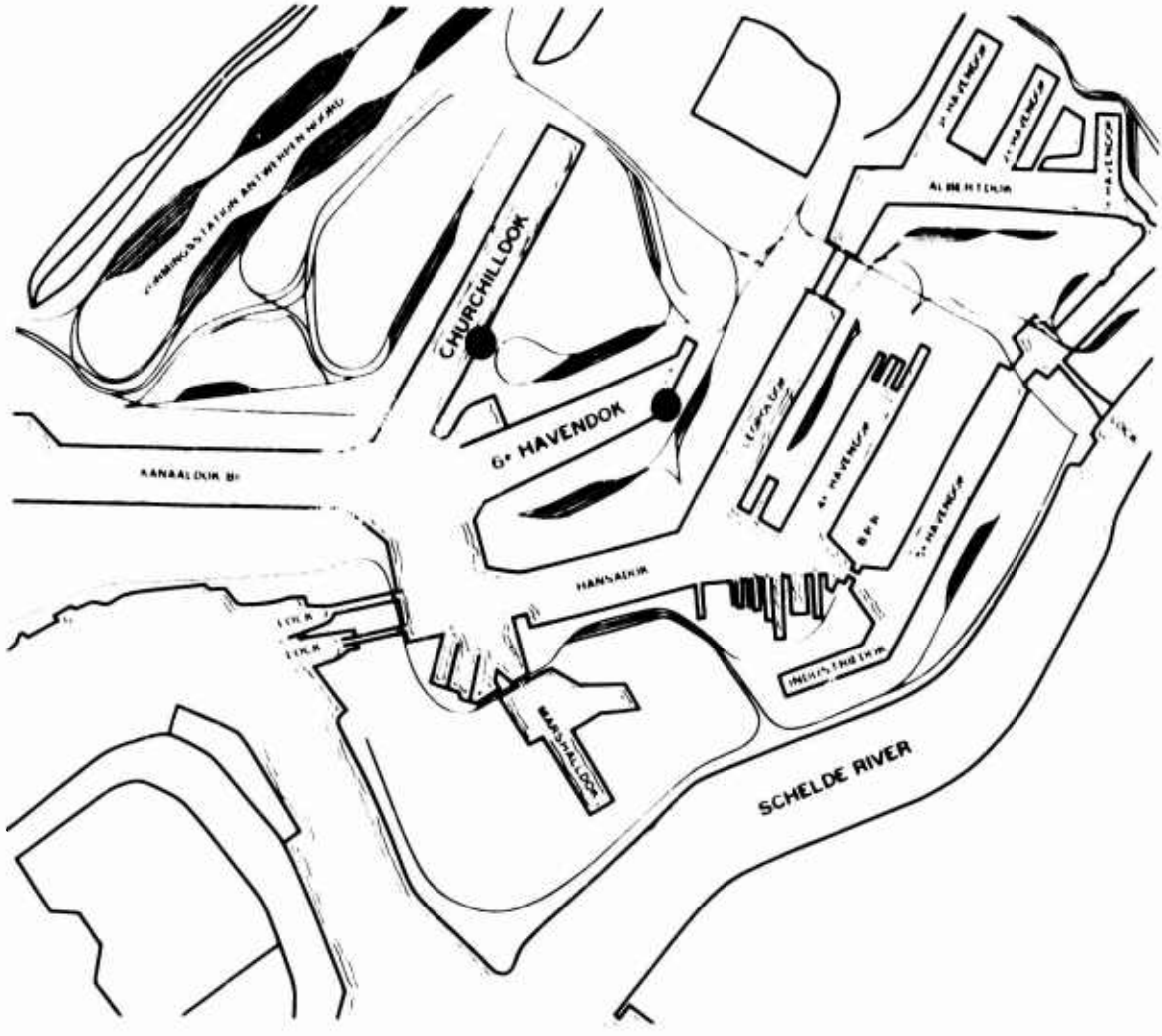


Figure 7-7. Port of Antwerp.

(2) The noon and evening meals for supporting military personnel in the port area did not coincide with the meal breaks of the stevedores. Nearly 3 hours of reduced productivity was experienced each day when drivers and mechanics were working without stevedores, or stevedores were working without drivers and mechanics. Often, individuals would voluntarily miss meals in order to maintain the impetus of operations.

d. Operations began at Churchill Dock (fig 7-8) with the arrival of the USNS Meteor at 2151 hours, 16 January. Prechecking and unlashing began that night. Vessel discharge began at 0600 hours, 17 January, from the stern ramp. A shore crane was used to lift cargo from hatches numbers 1 and 2. First priority for discharge was the sea-air interface cargo, which was to be staged separately. It was rapidly cleared by commercial truck and military convoy to the airfield at Durne, 20 kilometers away.

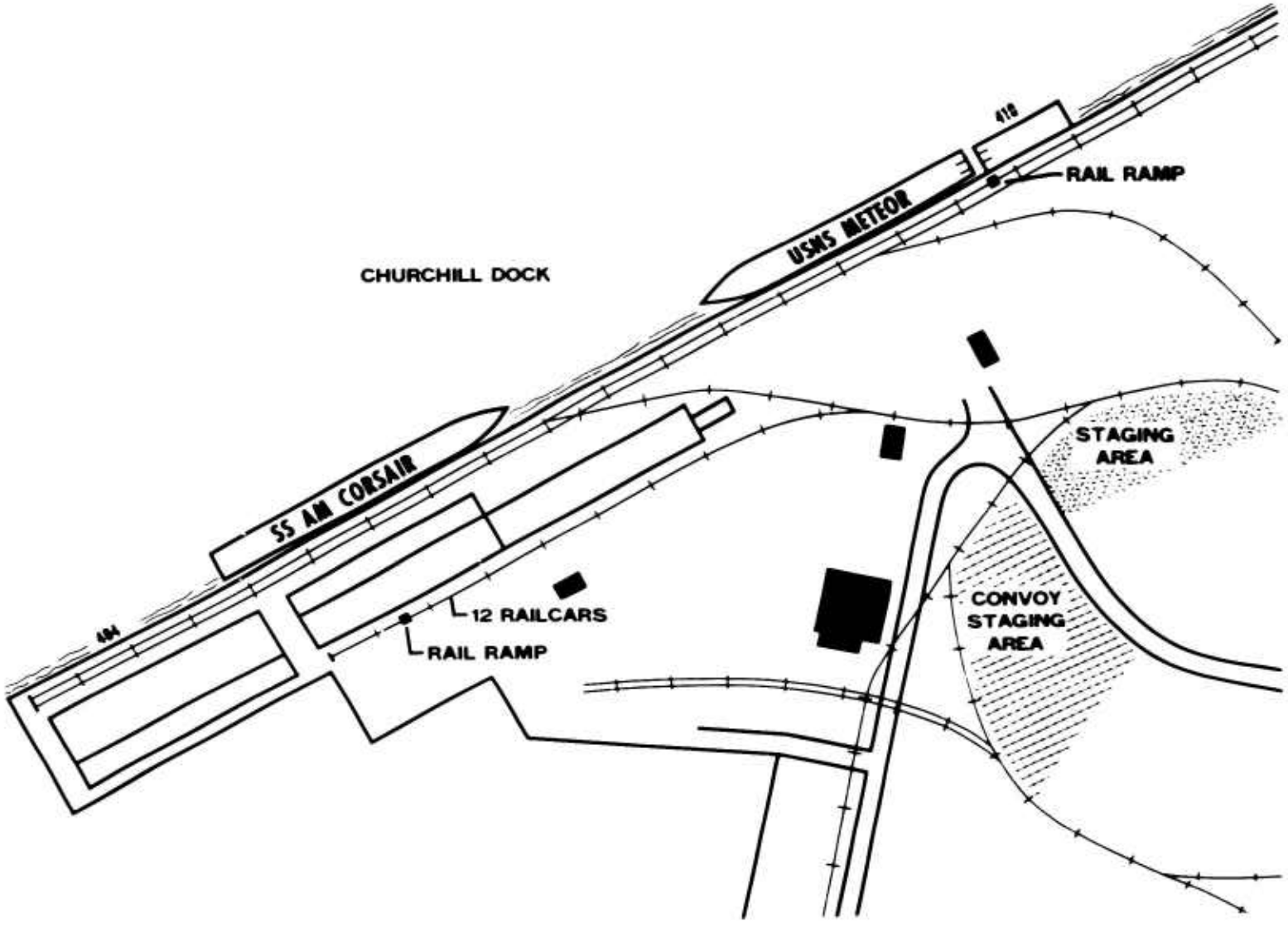


Figure 7-8. Hessenate-Neptunes B. V., Port of Antwerp.

It was then flown to Germany by US Air Force tactical airlift. Vehicles and cargo for onward rail movement were staged on the quay or loaded directly on railcars, using two STANAG rail-loading ramps built by the Belgian Army. Vehicles destined for convoy movement were staged in a separate area. Discharge was completed at 1700 hours, 18 January. This was 1 day later than anticipated, due to severe weather.

e. The SS American Corsair berthed at 1300 hours, 17 January, and discharge began at 0600 hours, 18 January. Prechecking was concurrent with discharge of this breakbulk vessel, since cargo checkers could not get to the cargo until the hatches were opened and discharge began. (Initial discharge of the SS American Corsair was concurrent with the second day of discharge from the USNS Meteor. BENELUX terminal had not planned to work both vessels simultaneously, so coordinating this dual operation was difficult.) Whenever possible, vehicles and cargo for onward rail movement were loaded directly on railcars. All sensitive REFORGER 79 cargo was stowed on the SS American Corsair. Uncertainty arose when the manifest identified 47 pieces and the signature and tally record identified 46 pieces. Upon discharge, 49 pieces were identified. Since this sensitive cargo had been block-stowed (all sensitive cargo stowed together), these discrepancies were easily reconciled. Discharge was completed at 1630 hours, 19 January, only 2-1/2 working hours longer than anticipated The cold weather did not affect discharge of the SS American Corsair as much as it affected the USNS Meteor, since vehicle starting on breakbulk ships is not required as it is on RORO ships.

f. The SS Maine berthed at 6e Havendok (fig 7-9) 15 January at 2326 hours. Prechecking was done on the afternoon of 16 January, and discharge began at 0600 hours the next day. Both of the ship's cranes and a shore crane were used to discharge cargo. Forty-two M60A1 tanks and M88 tank retrievers were discharged with a barge derrick crane, since the shore crane had insufficient capacity to lift tanks. (Ship's cranes working in tandem could have unloaded the tanks; however, this method was not used, since delays were anticipated should one of the ship's cranes became inoperable.) The barge derrick crane was moored to the offshore side of the vessel (fig 7-10). Since the crane had insufficient reach to extend across the vessel to the quay, the tanks were lifted onto a pushbarge. The pushbarge then moved the tanks, three at a time, to the quay where they were driven off (fig 7-11). Discharge was completed at 1635 hours, 19 January.

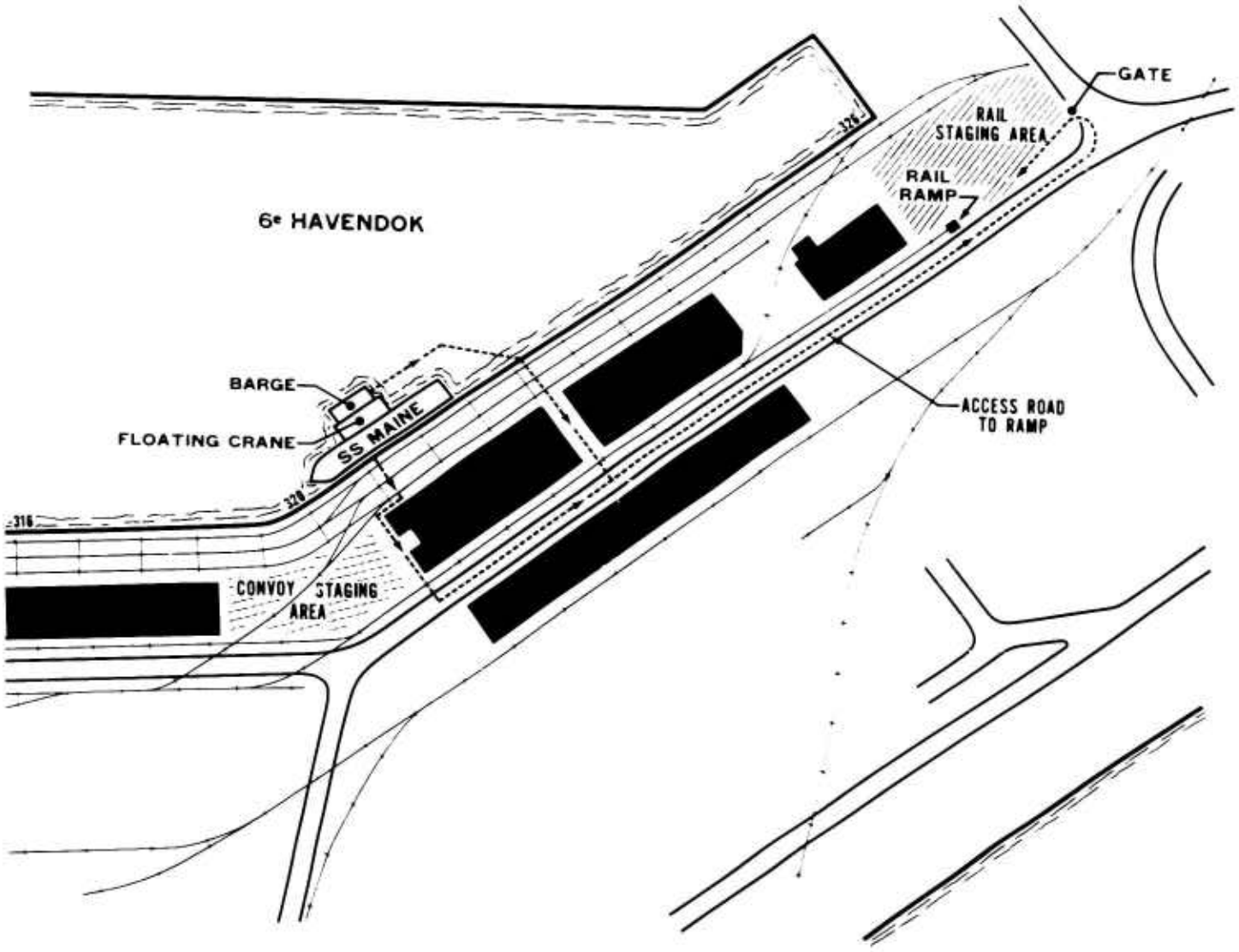


Figure 7-9. Noord Natie S.V., Port of Antwerp.

Figure 7-10. Tanks offloaded to barges via barge derrick crane.

Figure 7-11. A pushbarge shuttles tanks from the SS Maine to the quay.

g. Vehicles scheduled for motor convoy movement to Germany were first moved to temporary staging areas near the quay. They were then cleared by unit drivers using a shuttle system to move 15- to 20-vehicle serials to the primary convoy staging areas at Haasdonk and Burcht, Belgium. This movement was controlled by the Belgian Movements Staff assisted by the US 4th Transportation Brigade's 2d Movements Region, and escorted by the Belgian Military Police. The vehicles were then organized in march units for convoy to Germany.

h. Rail loading started at both locations at 1030 hours, 17 January. At 6e Havendok, which was unlighted, rail loading was halted at 1800 hours, 19 January, due to unsafe conditions caused by ice and darkness. Rail loading was resumed at 0700 hours the next day and was completed at 1200 hours. The two rail-loading sites at Churchill Docks were lighted and remained in operation; however, when icing conditions prevented safe use of the ramps, tanks were lifted on by tandem 25-LTON shore cranes. Although the loading of 12 trains was hampered by severe winter weather, it was essentially completed by 20 January, only 1 day later than anticipated. A few inoperable vehicles that could not be convoyed were retained in the port and loaded on railcars on 24 January.

4. Summary.

a. General. SPOD operations were characterized by efficiency and flexibility in responding to the highly dynamic environment of a multinational split-port operation during severe winter weather conditions.

b. Recommendations. It is recommended that:

(1) Consideration be given to eliminating the general agent for coordinating the efforts of individual stevedoring firms.

(2) Additional TMO personnel be provided to coordinate and control motor convoy port clearance.

(3) A minimum of one maintenance contact team be programed for each ship and each convoy staging area, and that each team be sufficiently equipped and structured by numbers and MOS skills to reflect anticipated workload.

(4) Driver requirements in Europe be more closely coordinated to insure that adequate drivers are available for port operations.

(5) Billeting areas for port support personnel be located as close as possible to the port, and the meal schedules be modified to compliment work schedules and commercial port practice.

(6) If a distant staging area is used, two separate driver-support elements be established, one for port operations responsive to the port operator and one for port clearance responsive to the TMO.

(7) Since AVLBs cause transportability problems, their movement be closely coordinated. Additionally, it is recommended that a cost analysis be conducted to determine the most responsive and economical way of shipping AVLBs.

(8) Vehicles not be stowed athwartships unless absolutely necessary, and then only lightweight, unloaded vehicles be so stowed.

(9) Additional care be exercised in stowing M880-series vehicles, since securement is nonstandard.

(10) Increased emphasis be placed on the management of sensitive cargo.

SECTION VIII

SHIP INTERIM USE

1. General. The following MARAD/MSC-owned or -chartered vessels were used to transport REFORGER 79 cargo to and from Europe: the GTS Admiral William M. Callaghan, the USNS Meteor, the USNS Comet, the SS Maine (ex-Seatrain), and the SS American Corsair. The SS American Corsair was used as a replacement for the USNS Comet during the deployment phase when the USNS Comet was laid up for boiler repairs in Europe.

2. Ship utilization.

a. The SS Maine. This ship, recently overhauled and added to the Maritime Administration's (MARAD) Ready Reserve Force (RRF) of the National Defense Reserve Fleet (NDRF), participated in both the deployment and redeployment sealift of REFORGER 79 cargo. Because of her unique status as an NDRF ship, the SS Maine was not scheduled to be utilized, nor was she utilized during the interim period; she was idle in Rotterdam, the Netherlands, from 20 January 1979 until 20 February 1979, when she commenced loading redeployment cargo.

b. The GTS Admiral William M. Callaghan. Upon completion of REFORGER 79 cargo discharge operations at Amsterdam, the Netherlands, on 17 January 1979, the GTS Callaghan proceeded to Mobile, Alabama, and Charleston, South Carolina. There she loaded cargo manifested for the United Kingdom, Bremerhaven, and Rotterdam. Upon discharge of United Kingdom cargo at Southampton, she was diverted from Bremerhaven to Rotterdam, where all remaining cargo was discharged. (A severe winter storm had closed the port at Bremerhaven.) The GTS Callaghan was on-berth for loading REFORGER 79 redeployment cargo on 17 February 1979.

c. The USNS Comet. Upon completion of necessary boiler repairs that precluded her use during deployment operations, the USNS Comet was used for a cargo run from Bremerhaven, Germany, to the Military Ocean Terminal, Bayonne, New Jersey. She reloaded there with non-REFORGER cargo and arrived in Rotterdam, the Netherlands, on 17 February 1979. She was available for backloading REFORGER 79 redeployment cargo on 22 February 1979.

d. The USNS Meteor. Upon completion of REFORGER 79 deployment cargo discharge at Antwerp, Belgium, on 19 January 1979, the USNS Meteor proceeded to Bremerhaven, Germany, for non-REFORGER cargo

backloading. She then made a round trip to Charleston, South Carolina, and returned to Bremerhaven; however, upon approaching Bremerhaven, she struck a buoy and fouled her propeller with the buoy's anchor cables. Cargo discharge was accomplished after initial inspections that indicated a damaged propeller in addition to the entanglement. Later, dry-dock inspections indicated that with minor repairs she would be seaworthy; therefore, alternative ship-use plans that were being considered were abandoned in favor of her delayed arrival in Rotterdam. The USNS Meteor arrived on berth in Rotterdam on 7 March 1979 for REFORGER 79 redeployment cargo loading.

SECTION IX

SPOE OPERATIONS--EUROPE

1. General.

a. MTMC TTGE planned and executed the redeployment of REFORGER 79 equipment by sea through the port of Rotterdam, the Netherlands. The operation was accomplished as an administrative move, utilizing existing MTMC TTGE port-handling and barge-loading contracts, and the most cost-favorable methods.

b. Equipment scheduled for loading aboard the SS Maine was shipped via barge through MTMC Rhine River Terminal sites. Heavy tracked vehicles were loaded at Mannheim, Germany, while the balance of equipment for the SS Maine was barge loaded at Karlsruhe, Germany. Cargo designated for loading aboard the GTS Callaghan, USNS Comet, and USNS Meteor was shipped via rail from Boeblingen and Grafenwoehr, Germany.

c. Upon completion of the field exercise phase of REFORGER 79, REFORGER equipment was moved to unit assembly areas. At these assembly areas, vehicles and CONEXs were to be cleaned by the owning units, inspected by customs, inspected and certified as ammunition free in accordance with AR 746-1, and prepared for shipment in accordance with AR 220-10. No ammunition-free certificates were placed on weapons or weapons systems, however, nor were the majority of vehicles properly prepared for shipment. Port personnel were forced to perform some of these functions in the interest of meeting ship departure schedules (fig 9-1).

d. The USAREUR 3d Movements Region, 4th Transportation Brigade was responsible for controlling the movement of REFORGER equipment from unit staging areas to Rhine River barge sites and to the SPOE in accordance with a call-forward message provided by MTMC BENELUX Terminal. This call-forward message was developed to provide the shipper with guidance concerning the order in which vehicles and equipment were to arrive at the SPOE and barge loading sites. The planned order of arrival was designed to enable the port operators to maximize the use of the limited staging areas available and to facilitate shiploading.

e. MTMC BENELUX Terminal was augmented with 30 tracked vehicle drivers (1st Cavalry Division), 20 mechanics (1st Cavalry Division and 51st Maintenance Battalion), 4 medical corpsmen, and 5 security guards (NATO SHAPE support group) to assist in port clearance operations.

Figure 9-1. Port support personnel removing vehicle tarps and bows.

2. Rhine River Terminal (RRT) operations.

a. Under the supervision of MTMC Rhine River Terminal, REFORGER cargo was loaded into nine barges: six in Karlsruhe, at Kalag Karlsruhe (fig 9-2), and three in Mannheim at the Goliath Crane location (fig 9-3).

b. Rhenus was the commercial terminal contractor responsible for barge loading operations. The barge carrier responsible for procuring and delivering required barge space was DAMCO a subsidiary of Nedlloyd-BV (fig 9-4). Other organizations and their responsibilities were as follows: 3d and 2d Movement Regions of the 4th Transportation Brigade (highway movement control), 37th Transportation Group (inland highway line-haul operations), 1st Cavalry Division (convoy operations, guards, and vehicle driver support), 517th Maintenance Company of the 51st Maintenance Battalion (maintenance support in Karlsruhe), and 42d Military Police (agricultural and customs inspection). The 28th Transportation Battalion of the 37th Transportation Group and TMO Mannheim (subordinate command of 2d Movements Region) had onsite liaison personnel at the barge loading sites. This, along with command emphasis, provided for excellent support from these two organizations.

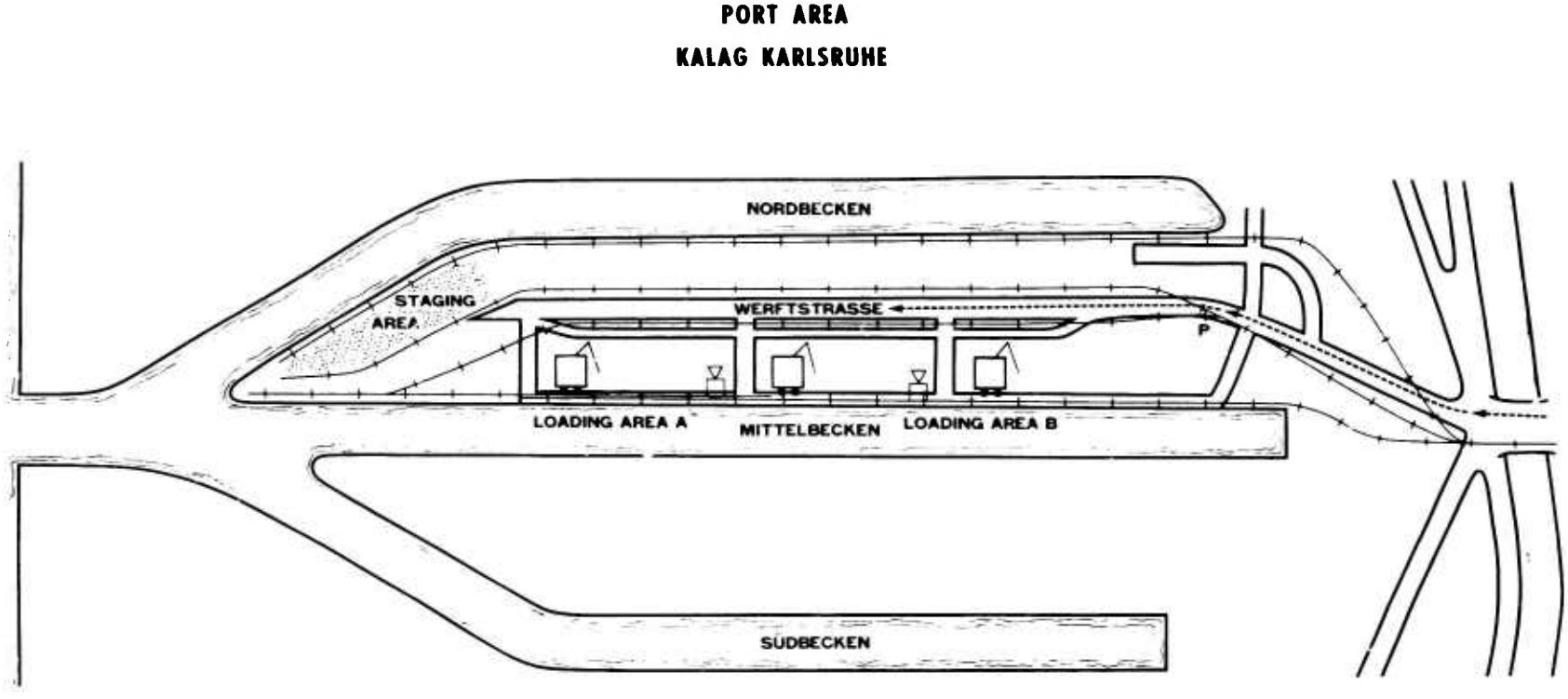


Figure 9-2. Barge loading site, Karlsruhe.

Figure 9-3. Mannheim Port Goliath crane.

c. Heavy tracked vehicles began arriving in Mannheim by 37th Transportation Group heavy equipment transporters on 14 February, with the last arriving on 16 February. Convoyed vehicles were driven into the Karlsruhe port staging area on 16 and 17 February.

d. The 42d MP reinspected equipment and monitored customs procedures at the port. This procedure proved to be satisfactory, as units had done a good job of cleaning and customs inspectors had conducted thorough inspections of equipment before it was sent to the port. Although agricultural requirements were met, units failed to complete DA Form 3803, certifying the ammunition-free status of all weapons systems and gun tubes. This inspection should have been done by the shipper (unit) before equipment entered the transportation system. Since this was not the case, special arrangements had to be made for this inspection to be done in Rotterdam before ocean-vessel loading.

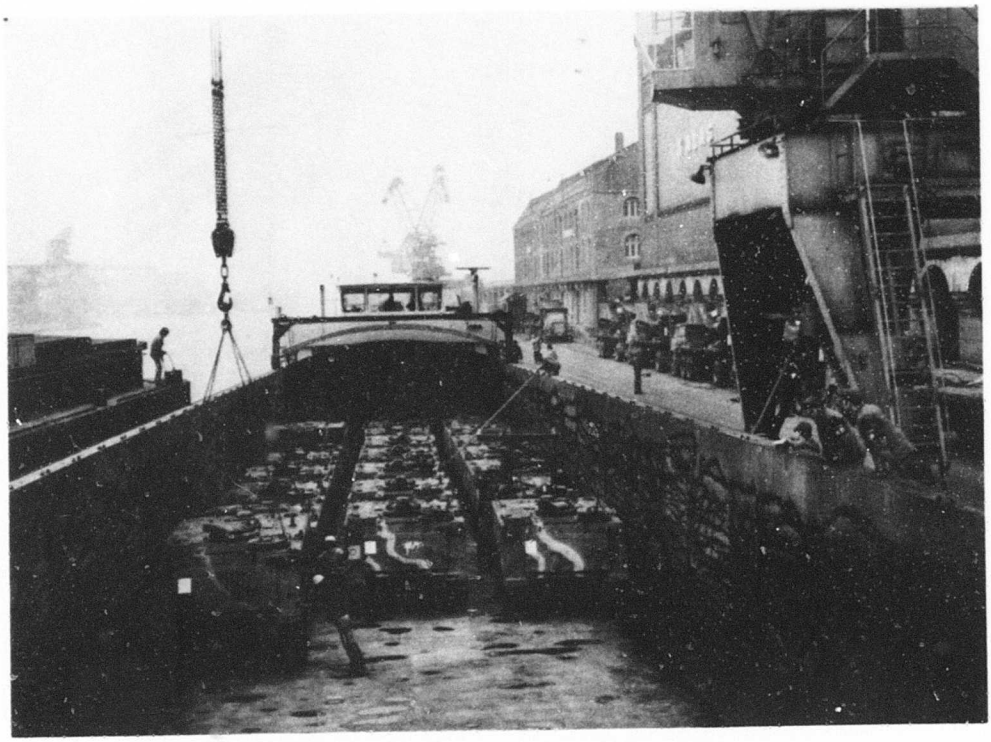


Figure 9-4. One of the barges provided by the carrier.

e. Although MTMC Rhine River Terminal and MTMC BENELUX Terminal had published specific call-forward and barge loading schedules, substitutions were made in the type of equipment delivered by convoy to the barge site in Karlsruhe. These substitutions were made because unit cleaning schedules in Boeblingen did not agree with shipping schemes. These substitutions could have caused substantial problems in the loading sequence at Rotterdam had the barge cargo been scheduled for other than the SS Maine. However, because of the design of the SS Maine (high overhead clearance in all storage locations) and notification that different equipment would arrive, these substitutions did not cause problems. This was not the case with the other ships, where changes in the rail call-forward schedules caused delays in loading.

f. As in past REFORGERs, unit preparation of equipment for shipment, such as consolidation and reduction of equipment to lowest cube (AR 220-10) and securement of loose items in truck and trailer beds, was inadequate. Loose items, such as axes, fuel cans, engines, oxygen, and acetylene bottles, are potentially dangerous to personnel, other cargo, and the transportation modes and must be adequately secured.

g. The tracked vehicles delivered to Mannheim and Karlsruhe by military line haul were prechecked by RRT personnel and marked with a "post" number. The post number was arbitrarily assigned to all cargo and served as a key to the item description in the standard port system. In addition, such premarking greatly facilitated cargo checking at both the barge-loading site and ocean-vessel-loading site. It was not possible, however, to precheck all wheeled vehicles, as checkers found that in many cases the bumper transportation control number (TCN) was obliterated. In addition, unit equipment was redeployed by vehicle type, without regard to unit integrity. This made it difficult for checkers to locate vehicle shipping data on the equipment list containing all REFORGER equipment, especially when complete TCN data were not available. When RRT checkers were not able to mark equipment with a post number, information on the vehicle type, bumper number, and/or USA number was included in the barge-sailing cable to BENELUX Terminal. BENELUX Terminal personnel reconciled this information before the barges arrived in Rotterdam.

h. Barge loading in Karlsruhe began on 16 February and was completed on 18 February. Cargo delivered by military highway mode was loaded directly into barges. The remainder of the cargo, which consisted of convoy vehicles, was loaded on 17 and 18 February. Two cranes (10- and 15-ton) were used by the barge-loading contractor to load the six barges. Sufficient lifting gear was available in Karlsruhe to handle all types of equipment redeploying through that terminal, as opposed to a lack of lifting gear at Mainz during REFORGER 78. Plans called for Saturday and Sunday operations, when commercial cargo is not normally loaded. This gave RRT exclusive use of the quay area and proved advantageous for this type of operation, in which large quantities of vehicles are staged and loaded in a short period of time.

i. In Mannheim, 46 M60A1 tanks and 4 heavy wheeled vehicles were loaded in one extended shift on 17 February. Cargo was loaded direct from 37th Group heavy-equipment transporters to three river barges.

j. RRT operations are summarized below, followed by recommendations.

(1) The transportation of both tracked and wheeled vehicles from Mannheim and Karlsruhe to Rotterdam by barge progressed smoothly without incident. Once again, as with the two previous REFORGERs that used barges, the barge mode proved more efficient and convenient than the rail mode. Over 11,000 measurement tons of cargo were loaded onto nine Rhine River barges, in 2-1/2 days, without problems or damage.

(2) Although unit assembly-area procedures for monitoring the cleaning of equipment for redeployment were effective, other procedures for preparing equipment for movement (reduction of vehicle cube, certification of ammunition-free status, securing loose items in truckbeds, and segregating hazardous cargo) were not adequate. This same problem has existed in each of the past three REFORGER exercises. Some USAREUR activity should assume responsibility for insuring that redeploying equipment is properly prepared for shipment.

(3) Units did not comply with the barge-loading call-forward schedule. Adverse effects of this noncompliance were averted by coordination between RRT, the units, and movement control personnel. Also, the characteristics of the SS Maine allowed for flexibility in stowage of various vehicle types.

3. SPOE operations.

a. General.

(1) All REFORGER 79 cargo receipt, staging, and shiploading activities were the responsibility of the MTMC BENELUX Terminal. Line-haul coordination in Rotterdam was the responsibility of TMO Rotterdam, a subordinate command of 4th Transportation Brigade's 1st Movement Region.

(2) All redeployment shiploading operations took place in Rotterdam (fig 9-5). The GTS Callaghan was loaded at the Prins Johan Frisohaven (fig 9-6) by Seaport Terminals, Limited. The USNS Comet, USNS Meteor, and SS Maine were loaded at Lloydkade Schihaven (fig 9-7) by Uniport Stevedoring Company.

(3) All cargo was checked and tallied as it arrived in Rotterdam terminals. It was found that many of the TCNs stenciled on vehicle bumpers were obliterated or illegible. This proved that bumpers, because of their intended purpose, are not the most logical spot on which to place important data (fig 9-8).

(4) Some REFORGER 78 cargo, which remained in the Federal Republic of Germany for use in REFORGER 79, was returned to CONUS with REFORGER 79 cargo; likewise, some deployed REFORGER 79 cargo did not return to CONUS. These variations, however, did not seriously affect redeployment planning, as there was a small net reduction in cargo redeployed.

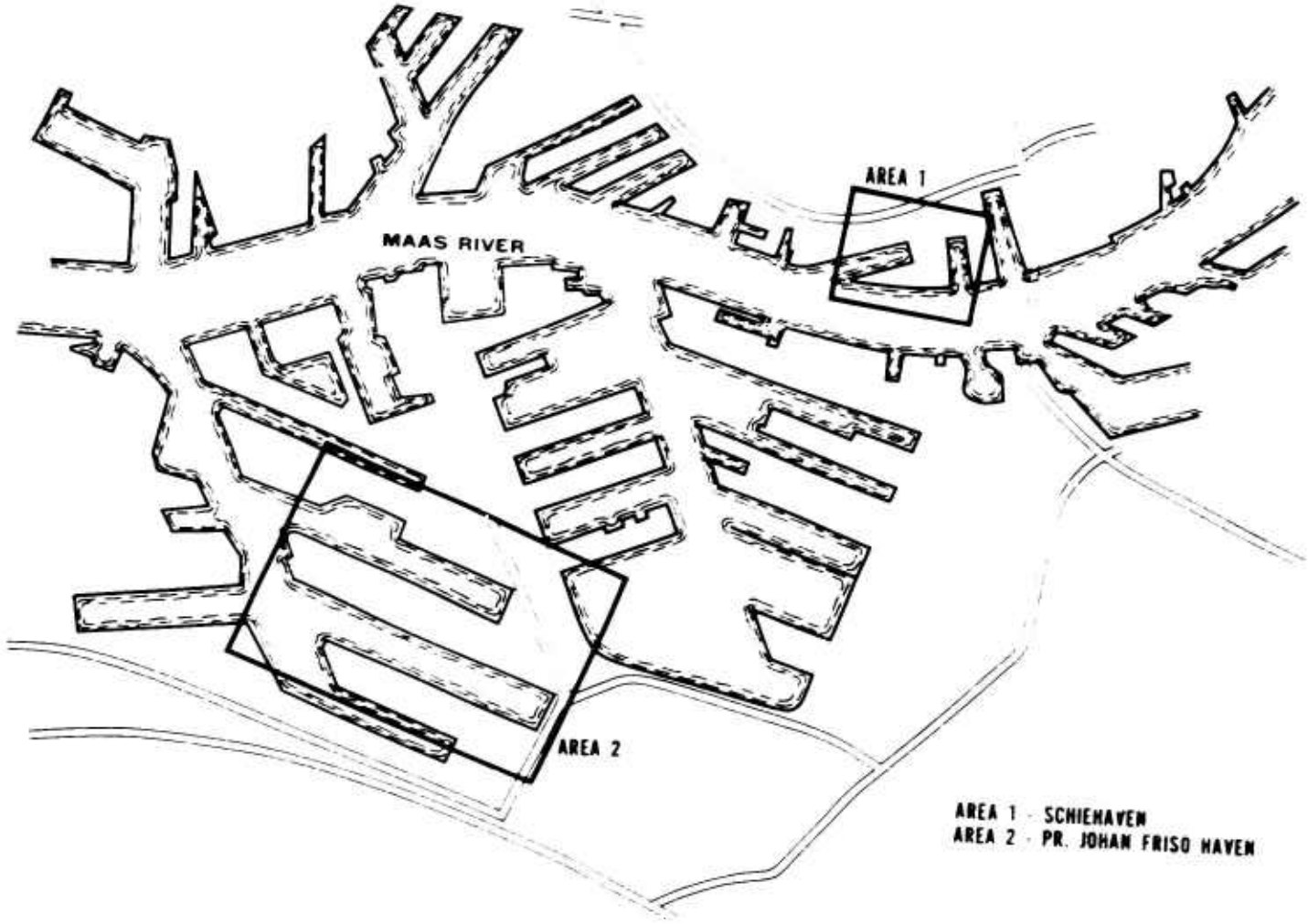


Figure 9-5. Rotterdam port facilities.

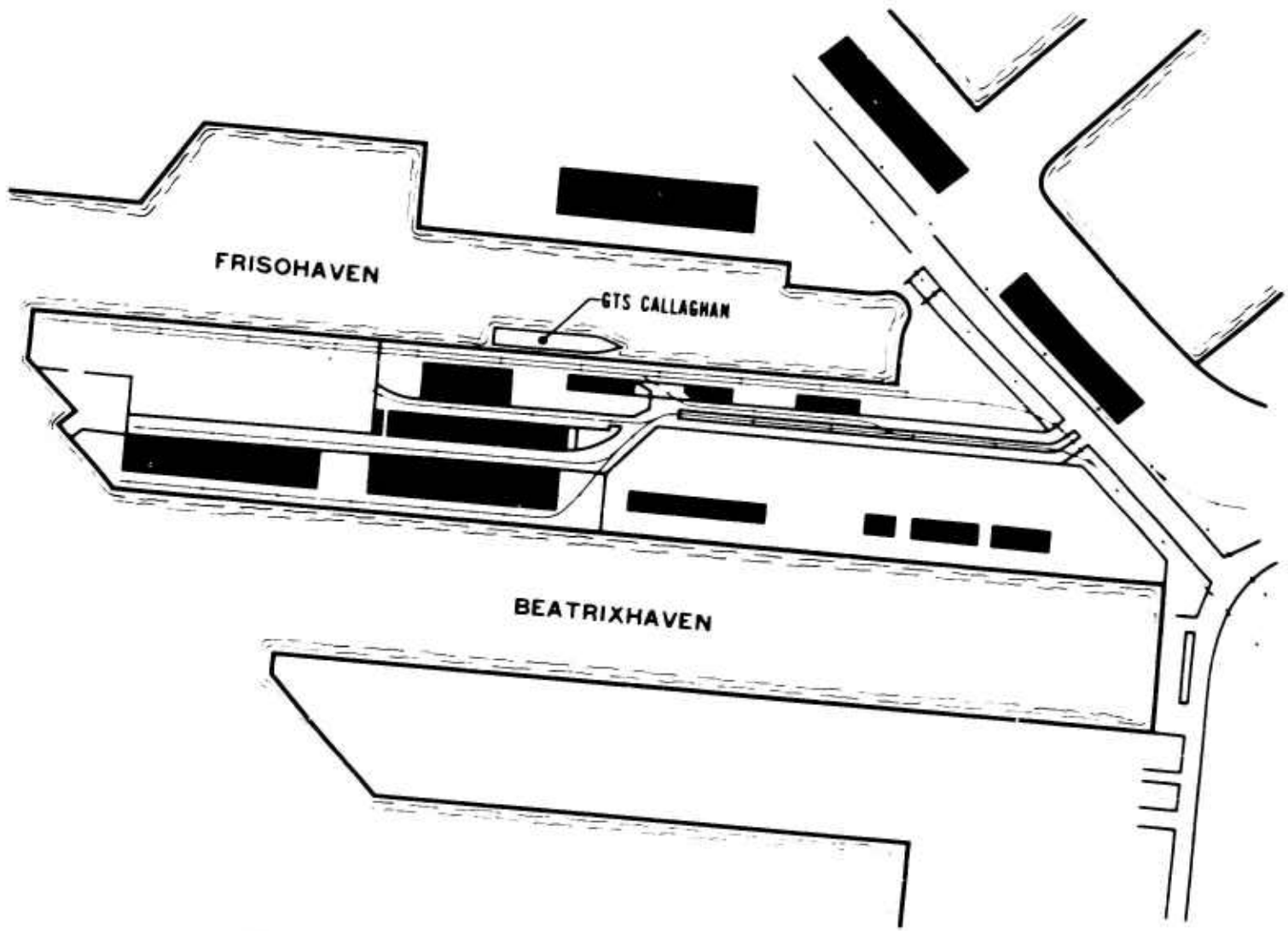


Figure 9-6. Prins Johan Frisohaven, Rotterdam.

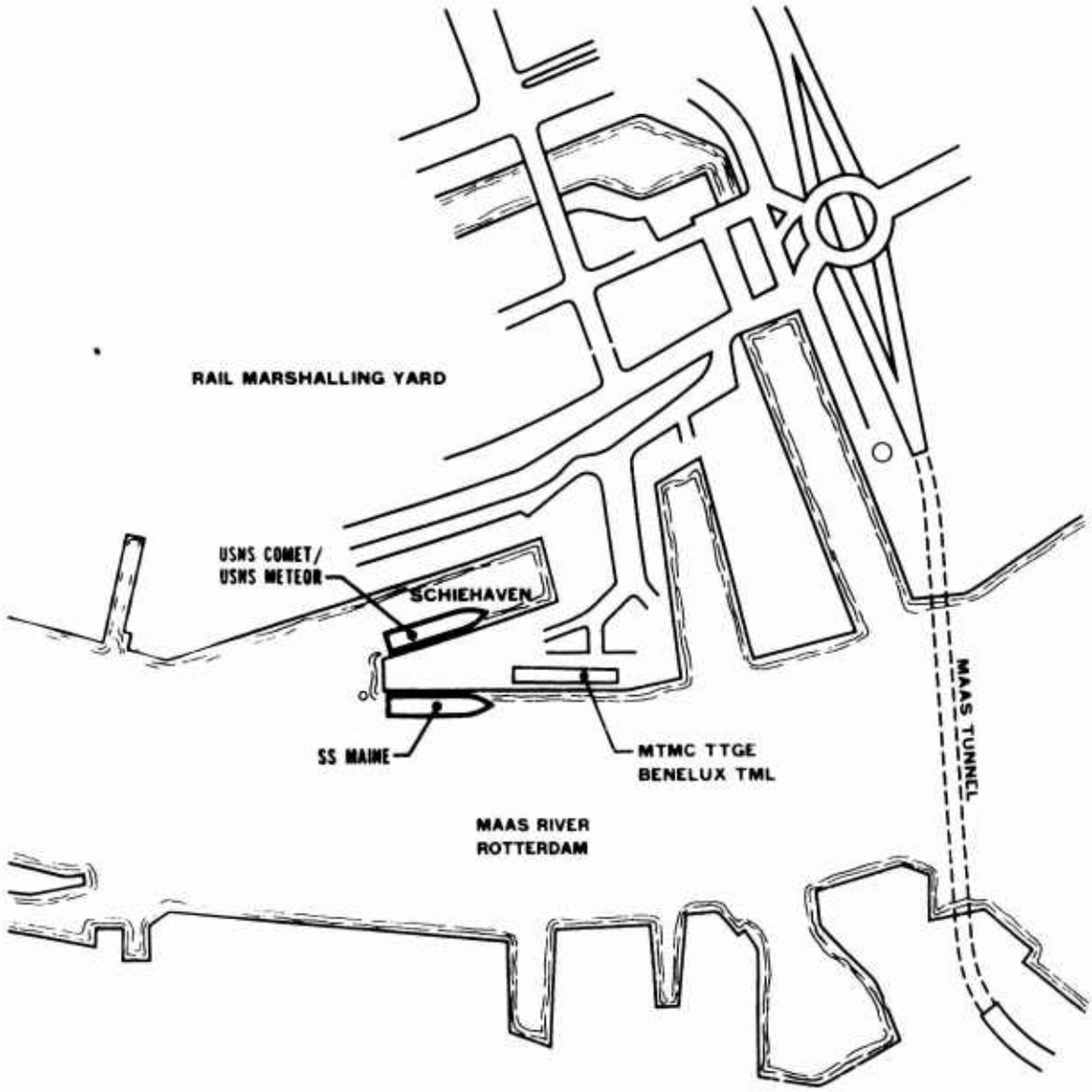


Figure 9-7. Schiehaven, Rotterdam.

(5) While cold weather affected the starting capabilities of vehicles, during both rail offloading and shiploading, environmental factors did not significantly hinder shiploading or cargo-securing operations.

(6) Although weather did not significantly hinder port operations, the poor condition of equipment did. About 30 percent of this equipment was inoperable or required maintenance.

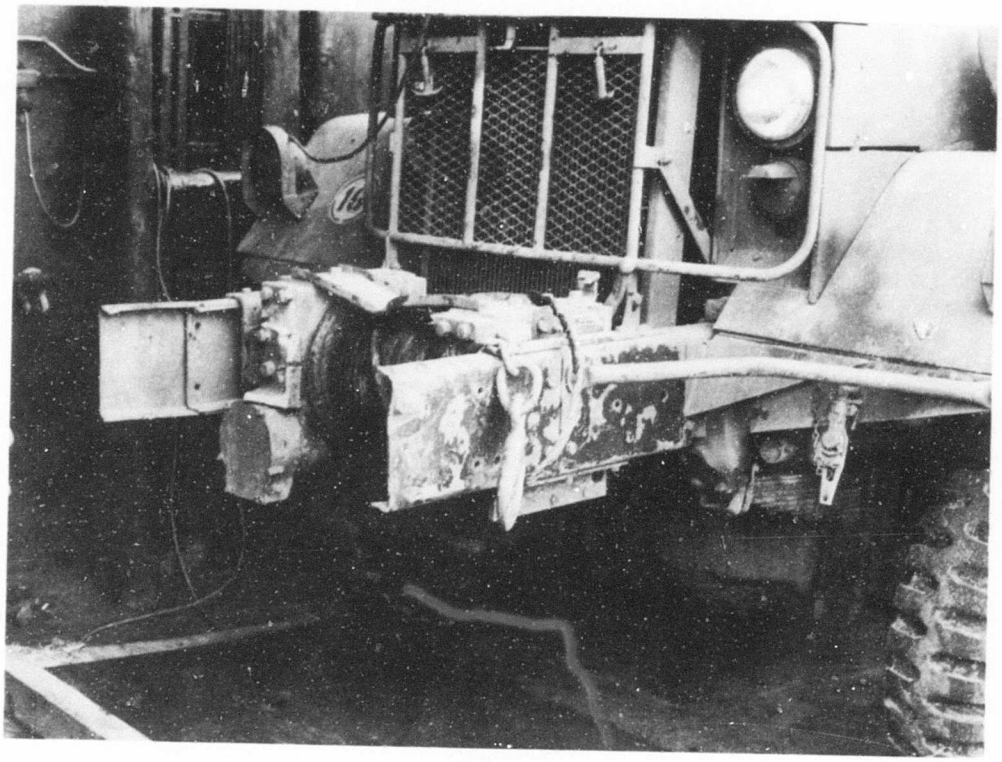


Figure 9-8. Bumpers prove to be disadvantageous to location of TCNs.

b. Cargo receipt and staging operations.

(1) Rail cargo was transported on 32 special trains from Grafenwoehr and Boeblingen, Germany, to Rotterdam. Barge-loaded cargo was shipped aboard nine barges.

(2) Various problems, such as shortages of securing materials and muddy conditions, affected the train departure schedules at the rail-loading sites. As a result, trains did not arrive at the port as stipulated in the call-forward message. This, in turn, adversely affected ship-loading operations, since shipload plans could not be followed. Some loading space aboard the USNS Comet and GTS Callaghan could not be utilized, as planned cargo was not available to fill voids. Rail offloading was also hampered by the fact that the Lloydkade could accommodate only 24 railcars at one time, and up to 2 hours were required to switch in a new string of cars.

(3) Rail-loaded vehicles were not consolidated or reduced, as specified in AR 220-10. Also, many vehicles had unsecured cargo in cargo beds and troop-carrying compartments (fig 9-9). Additionally, many vehicles contained empty unpurged 5-gallon fuel cans, which had to be removed at the port and consolidated into the back of a 2-1/2-ton truck for deck stowage (fig 9-10).

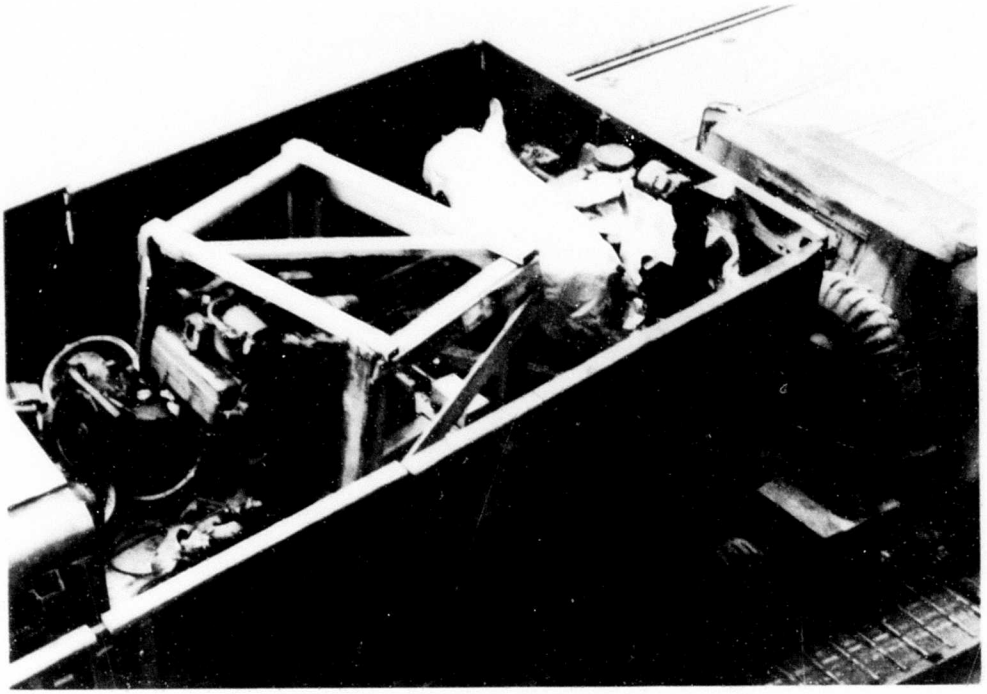


Figure 9-9. Many cargo beds contained unsecured cargo.

(4) Redeployment movement plans (call-forward and shipload) dictated that equipment be discharged from railcars and loaded directly onto ships; however, when schedules were not followed and vehicle holding became necessary, staging operations could not be conducted on a large enough scale at Lloydkade. Commercial operations, being conducted concurrently with REFORGER redeployment operations, left little room for REFORGER cargo staging (figs 9-11 and 9-12). Throughout the terminal there was an intermixing of REFORGER and commercial cargo, to the extent, in some cases, that REFORGER cargo was almost entirely surrounded by commercial cargo.

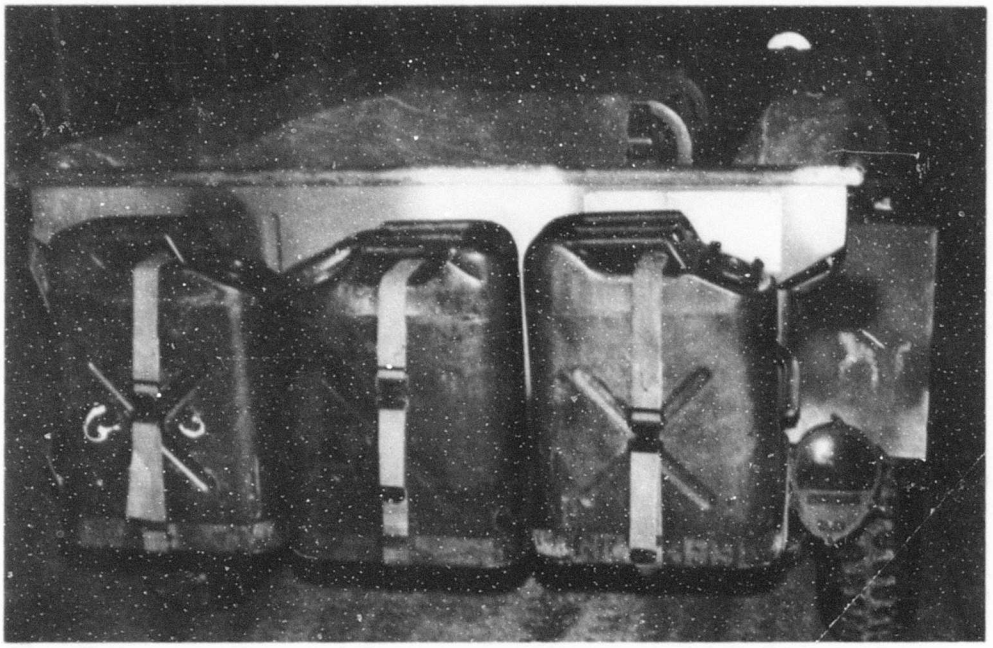


Figure 9-10. Vehicles arrived at the port with fuel cans either in cargo beds or attached.

(5) The Prins Johan Frisohaven Terminal provided both adequate staging area and railcar sidings. There was very little intermixing of commercial and REFORGER cargo at this location.

(6) At both terminals, rail offloading operations were severely hampered by a great number of inoperative vehicles aboard trains. These vehicles required time-consuming special handling, involving lift-off, tow, or push-off of equipment from railcars.

(7) Requirements for signature service for protected/sensitive cargo (Categories I, II, and III), in accordance with USAREUR Reg 55-355, were not met by the unit/shipper during redeployment. No signature service accompanied such cargo arriving at the SPOE by rail. CONEXs shipped by rail were accounted for by railcar load only, not by CONEX number. In one case, a CONEX arrived containing Category I items without security guard protection or signature service. The door to this CONEX was not secured; however, the lock and seal were intact. This lack of proper identification caused MTMC BENELUX Terminal great difficulty in identifying this cargo and providing security for it.

Figure 9-11. The Lloydkade area was too congested to support sustained RORO operations.

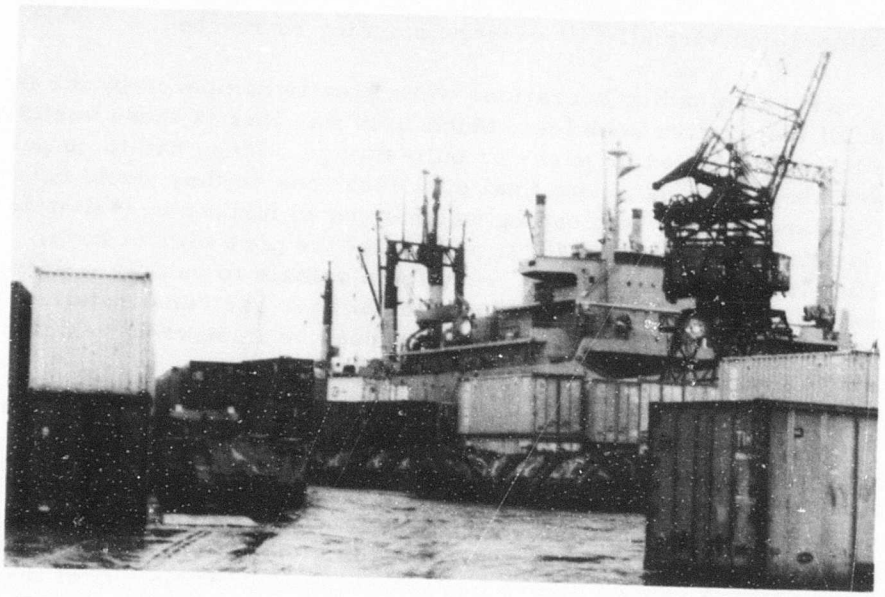


Figure 9-12. Commercial and military cargo was intermixed at Lloydkade.

c. Vessel loading.

(1) Statistics on ship berthing, loading, securing, man-hour summary, and sailing times are depicted in table 9-1.

TABLE 9-1
SPOE SHIPLOADING SCHEDULE

Vessel	Date on Berth	Start Operations	Cease Operations	Hours Lapsed Work Time	Man-Hour Summary			MTON	Ship Sailing Time
					LOLO Gangs	RORO Gangs	Lashing Gangs		
SS Maine	1526 hrs 20 Feb 79	1850 hrs 20 Feb 79	0630 hrs 24 Feb 79	60.5	1,096	0	1,786	12,252	0705 hrs 24 Feb 79
USNS Comet	0852 hrs 18 Feb 79	0810 hrs 21 Feb 79	1600 hrs 27 Feb 79	88	706	775	1,881	11,487	1812 hrs 27 Feb 79
GTS Callaghan	1112 hrs 17 Feb 79	0730 hrs 26 Feb 79	1105 hrs 2 Mar 79	68.5	528	960	2,208	22,643	1820 hrs 2 Mar 79
USNS Meteor	1930 hrs 2 Mar 79	0730 hrs 3 Mar 79	1435 hrs 8 Mar 79	63	712	952	2,072	14,136	0600 hrs 9 Mar 79

(2) The shiploading schedule was altered when the USNS Meteor was unable to meet its schedule because its propeller has been fouled in Bremerhaven and it had to be drydocked for repairs. The USNS Comet and USNS Meteor exchanged places in the loading schedule, with the USNS Meteor loading last instead of second. This upset load planning because the USNS Comet, whose lower holds have more restrictive overhead clearances, could not accommodate all of the cargo planned for the USNS Meteor. Further, the noncompliance with the call-forward message necessitated that virtually all prestow planning be revised.

(3) Shiploading operations were greatly hampered by the large number of inoperative vehicles. Much time was lost as these vehicles had to be jump-started or push- or pull-started. Many had to be pushed or towed aboard ship and into final stow locations as they would not start (figs 9-13 and 9-14). Shiploading was hampered further by a shortage of M880 ignition keys. Many M880s arrived at the port without keys, requiring drivers to "leap-frog" keys from vehicle to vehicle. (It was also noted that many M880 vehicles did not nave gas caps installed.) Maintenance contact teams were very responsive in starting vehicles and repairing as many inoperable vehicles as possible.

(4) Personnel of the 1st Cavalry Division were available to operate tracked vehicles for rail offloading and shiploading. However, because loading operations extended 7 days beyond the scheduled time frame and because air-movement schedules had to be met, these drivers were not available for the last week of loading operations. This absence of trained drivers caused delays in the loading and positioning of tracked vehicles aboard the USNS Meteor, as only three qualified operators (two military and one civilian) were available at that time.

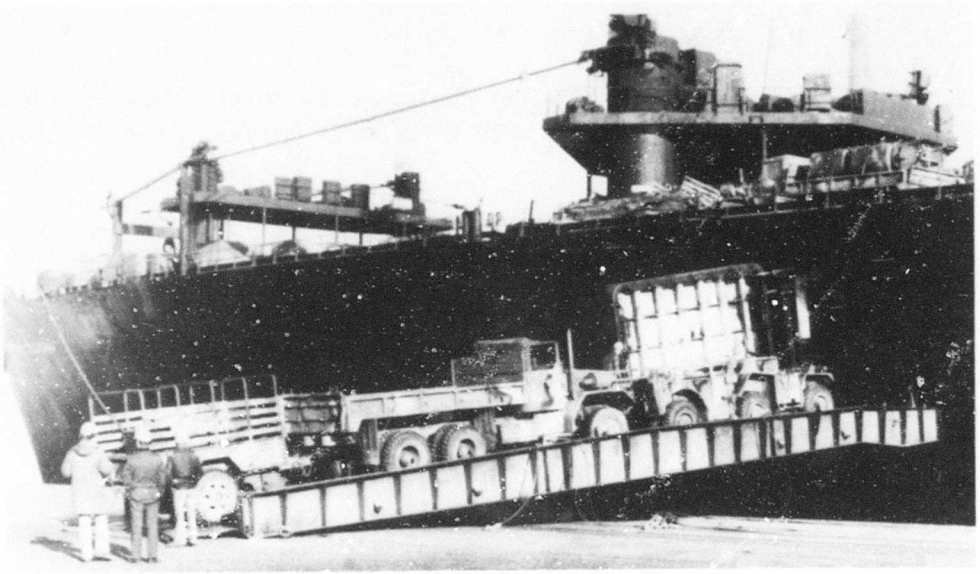


Figure 9-13. Inoperative vehicles, having to be pushed or towed abcard ship, hampered shiploading operations.

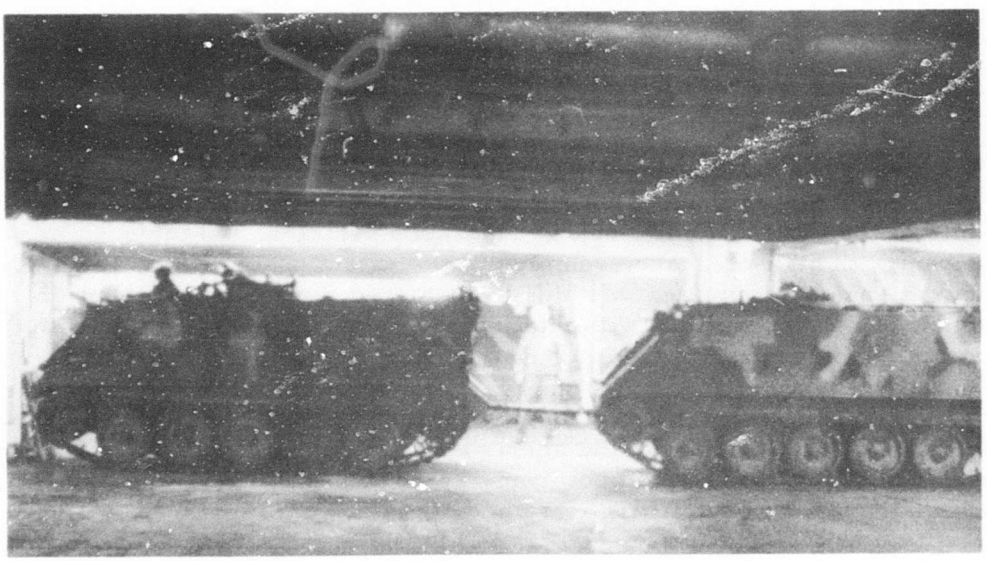


Figure 9-14. Inoperative M113 being positioned via tow bar on USNS Meteor.

(5) Shiploading progressed as follows:

(a) SS Maine.

1. The SS Maine was loaded by stevedore gangs (table 9-1), using shore cranes to lift cargo from river barges, railcars, and the quay.

2. Stow aboard the SS Maine was tight, making excellent use of space. Cargo was both lashed and shored, as it was during deployment.

3. Some problems were encountered with the lashing and shoring procedures used by the contractor. BENELUX Terminal personnel checked these procedures and required the contractor to make modifications to any found to be unsatisfactory.

(b) USNS Comet.

1. The USNS Comet was loaded by using the after, portside ramp for RORO operations and a shore crane for lifting cargo into hatches 1 and 2 and onto portions of the main deck. Gang structures for stevedoring operations are summarized in table 9-1.

2. Stowage aboard the USNS Comet was relatively tight; however, it was not maximized, due to the lack of cargo that resulted from the unpredictable arrival of rail-loaded cargo. This situation also caused the loading operation to extend beyond the time predicted. In many instances large equipment available at the port could not be loaded until smaller size equipment was available to load into the number 3 upper and lower holds and number 4 hold, all of which have low clearances. In spite of the nonavailability of low-clearance vehicles, tween decks were stowed with high-clearance vehicles to the extent possible, yet leaving access space for smaller vehicles to be moved through into the lower holds. RORO operations were stalled one morning when the side ramp became unhinged at low tide.

3. Cloverleaf fittings in the ship's holds were found to be so full of rust, dirt, and debris that number 10-type peck and hale lashing-binder hooks would not properly fit some fittings. The ship's crew cleaned out each fitting to remedy the problem.

4. The wing areas of numbers 1 and 2 platform decks and upper tween decks have overhead clearances too low to accommodate CONEXs. The hatches were loaded although the lack of low-clearance cargo precluded use of the wing areas.

(c) GTS Callaghan.

1. The GTS Callaghan was loaded by using the forward portside ramp for RORO operations and shore cranes for the lift-on of cargo into the number 1 hold and part of the main deck. Gang structures for stevedoring operations are summarized in table 9-1.

2. Stowage aboard the GTS Callaghan was relatively tight, but it could have been improved if the correct equipment had been available in the staging area. Nevertheless, at the end of the loading operation, space adjacent to the forward side ramps was unused as the ship was loaded to its maximum weight.

3. Equipment loading progressed slowly at times, depending on the arrival of rail-loaded equipment. Some wheeled vehicles were convoyed from Lloydkade to be loaded aboard the GTS Callaghan. There were periods when insufficient cargo was available to sustain continuous roll-on operations.

(d) USNS Meteor.

1. The USNS Meteor was loaded by using the aft starboard-side ramp for RORO operations and a shore crane for lift-on of cargo into the number 1 and number 2 holds and portions of the main deck. Jeeps and trailers were loaded into the number 1 hold. Gang structures for stevedoring operations are summarized in table 9-1.

2. Stow aboard the USNS Meteor was very tight, with excellent utilization of space.

3. Equipment loading progressed slowly, even though all cargo was available either in the port or in rail holding yards nearby. Almost 4 hours' loading time was lost during the initial day of loading, as the ship was berthed over 40 feet forward of the point where the side ramp was to be positioned. The ship was then repositioned, using ship's gear. In addition, the inadequate staging area, the terminal congestion, the inoperable vehicles, and the limited rail-siding capacity all contributed to the loading delays.

4. Since the USNS Meteor was the final ship to be loaded, equipment was consolidated at the port to insure that loading space aboard the ship would accommodate all available cargo (fig 9-15). Cargo consolidation operations proved difficult as most cargo beds contained quantities of unsecured cargo.

Figure 9-15. To insure adequate space aboard USNS Meteor, vehicles were consolidated.

4. Summary and recommendations.

a. SPOE Europe shiploading operations were successful although more time was required than originally scheduled. A variety of problems were encountered, the greatest being noncompliance with the call-forward message for rail-loaded cargo and the rescheduling of the USNS Comet for USNS Meteor.

b. Rail-loaded cargo was not reduced in accordance with AR 220-10. It is recommended that shipping units insure that all equipment is reduced prior to rail loading to SPOE.

c. Many cargo beds and troop carrier compartments were strewn with unsecured cargo. In one case, a 1/4-ton trailer was found loaded with two 1/4-ton truck engines and a transmission, none of which was secured. Another example was a 2-1/2-ton truck containing the following unsecured items: three 12-volt batteries, two open cases of 1-quart oil cans, loose 1-gallon cans of transmission fluid, loose 5-gallon cans of gear oil, and other miscellaneous items. It is recommended that all cargo be properly secured prior to rail loading.

d. Very little, if any, rail-loaded cargo was consolidated as required by AR 220-1. One string of railcars contained nothing but 1-1/2-ton

trailers, none of which had been nested. For the purpose of economy of transportation and maximum space utilization, it is recommended that cargo be consolidated as much as possible prior to rail loading.

e. The Uniport facility at Lloydkade/Schihaven is not well suited for large-scale rail-to-ship RORO operations as it lacks adequate staging areas and rail sidings, and is congested with commercial cargo. However, this terminal is ideal for barge-to-ship loading operations. It is recommended that transportation planners be aware of these limitations and that the use of this terminal for large-scale rail-to-ship RORO operations may result in shiploading delays.

f. The upper tween deck and platform deck wings of the USNS Comet should be used for stowing low-clearance vehicles (jeeps and trailers). Load planning and prestow planning should incorporate this procedure.

g. TCNs should not be stenciled on bumpers. In that position they are too apt to be obliterated or disfigured. Recommend the use of a standard position that is easily readable and less subject to damage.

h. Filled fuel cans on vehicles continue to create problems for port operators. Cans were removed from vehicles and consolidated for on-deck stowage during REFORGER 79. If in the future MSC persists that filled fuel cans will not be permitted below main deck level on RORO vessels, deploying units should be charged with the responsibility of consolidating these cans or required to clean and purge them for on-vehicle stowage.

i. Requirements for signature service for protected/sensitive cargo (Categories I, II, and III) were not met by unit/shipper during redeployment. Recommend the following measures be taken to correct this problem:

(1) Units must precisely identify and document protected/sensitive special-handling cargo.

(2) A signature service record must be prepared by the unit/shipper identifying cargo by TCN or CONEX/MILVAN number.

(3) The terminal must be notified immediately by the unit or shipping activity when scheduled protected/sensitive cargo is en route to port.

j. No ammunition-free certificates were placed by units on weapons or weapons systems in the assembly areas as required by AR 746-1. It is recommended that additional command emphasis be exercised by deploying units in movement planning and operations.

k. Call-forward instructions were not followed. It is recommended that units plan vehicle-cleaning and rail-loading operations to coincide with requirements stipulated by the call-forward message. Movements control personnel must also become involved in this procedure.

SECTION X

CONUS SPOD OPERATIONS

1. General.

a. The same Texas port areas and facilities used for the deployment phase of REFORGER 79 were again employed during redeployment. The USNS Comet, GTS Admiral William M. Callaghan, and USNS Meteor were discharged at Beaumont. The SS Maine was discharged at Port Arthur.

b. The Commander, MTMCEA, designated as the MTMC REFORGER 79 action agent by Commander, MTMC, was tasked with overall responsibility for redeployment port operations in the port complexes. He established a redeployment operations center at Beaumont to monitor all facets of the operation. This center opened 11 March 1979 and closed 25 March 1979. The Commander, Gulf Outport, was tasked by MTMCEA to organize and conduct cargo discharge and port clearance activities. He published a detailed operations plan that outlined the actions required of all participants.

c. No significant cargo damage resulted from the ocean voyage or during ship discharge and port clearance activities.

d. Stevedoring operations at both ports were efficiently conducted by Atlantic and Gulf Stevedores, Incorporated.

e. Military drivers operated track vehicles and M561 gama goats in accordance with an agreement between MTMC and the local International Longshoreman's Association (ILA) union. This agreement required that there be one military driver for each union driver in a RORO gang. On a few occasions, time was lost when there were insufficient military drivers, and the stevedore gang foreman halted operations until military drivers were available.

f. The 13th Corps Support Command (COSCOM) provided command and control of the non-MTMC units that were providing port support.

2. Discharge operations.

a. Ship discharge operations at Beaumont, Texas.

(1) The Main Street berth was used to discharge the USNS Comet. Operations commenced at 0700 hours, 12 March 1979. Table 10-1 depicts the elapsed time and man-hours expended.

TABLE 10-1
VESSEL DISCHARGE DATA

Vessel Name	Date on Berth	Start Operations	Cease Operations	Elapsed Hours	Man-hour Summary		
					RORO Gangs	LOLO Gangs	Unlashing Gangs
USNS Comet	1500 hrs, 11 Mar 79	0700 hrs, 13 Mar 79	1345 hrs, 13 Mar 79	20.8	268	183	303
SS Maine	1500 hrs, 11 Mar 79	0700 hrs, 13 Mar 79	1615 hrs, 12 Mar 79	21.50	-	717	567
GTS Callaghan	1500 hrs, 15 Mar 79	1900 hrs, 15 Mar 79	0330 hrs, 17 Mar 79	19.50	530	341	603
USNS Meteor	2100 hrs, 21 Mar 79	0700 hrs, 22 Mar 79	2200 hrs, 22 Mar 79	10.75	483	116.0	225

(2) The USNS Comet's starboard fore-and-aft side ramps were employed for RORO operations. Both ship's gear and a 60-ton shoreside gantry crane were utilized to lift off deadlined cargo. Discharge proceeded slowly, because a majority of the vehicles onboard required starting assistance and a large number of deadlined vehicles had to be towed or lifted off the ship, lengthening the time required to discharge the vessel.

(3) The GTS Admiral William M. Callaghan was also discharged at the Main Street berth. Operations commenced at 1900 hours, 15 March 1979. Table 10-1 depicts the elapsed time and man-hours required.

(4) The vessel's starboard fore-and-aft side ramps were employed for RORO operations. Again, both the ship's gear and a 60-ton gantry crane were utilized to lift off deadlined vehicles. RORO discharge progressed rapidly as below-deck tracked vehicles required only minimum starting assistance. Lift-off from the main deck was rapid because the ship's gear and the gantry crane were used simultaneously. Deadlined tanks on the upper tween deck were towed off last to avoid conflict with RORO operations from the lower decks.

(5) Similarly, the Main Street berth was used to discharge the USNS Meteor. Operations commenced at 0700, 22 March 1979. Table 10-1 depicts the elapsed time and man-hours required.

(6) The Meteor's port side ramps, fore and aft, were employed for RORO operations. Both the ship's gear and the 60-ton gantry crane were utilized to lift off deadlined cargo. Discharge was slowed by the numerous vehicles that required starting assistance.

b. Ship discharge operations at Port Arthur, Texas.

(1) Discharge operations for the SS Maine commenced at 0700 hours, 12 March 1979. Table 10-1 depicts the elapsed time and man-hours required.

(2) Discharge was accomplished by lifting most tracked vehicles directly to railcars with other cargo being discharged to the quay. Lift-off was accomplished utilizing a 100-ton shoreside gantry crane.

(3) During unlashing operations some M880-series vehicles were found to be improperly secured; however, no attributable damage was noted. Port operators must be aware of the correct lashing procedures for these commercial-type vehicles.

3. Staging operations.

a. Staging areas used for redeployment were those used during the deployment phase. The operations plan published by Gulf Outport specified cargo segregation by mode of port clearance, destination, and type of equipment. During cargo exception inspections, a special effort was made to insure that cargo was appropriately staged.

b. Wheeled vehicles discharged at Port Arthur, not rail-loaded there, were driven to Beaumont where they were staged for inclusion in military highway convoys bound for Fort Hood.

c. A cargo exception inspection was made on each item of cargo, and only major damages were recorded, using preprinted TCMDs (DD Form 1384) attached to the cargo.

4. Port clearance.

a. Port clearance operations were accomplished by using rail, commercial highway, and military convoy.

b. The following are specifics concerning the various modes of transport:

(1) Rail. The rail carriers provided service on the routes shown at figure 10-1.

(a) Railcars were not furnished in accordance with the agreements between MTMCEA and the rail carriers. Eighty-nine-foot chain-tiedown flatcars with 16 chain sets, plus 50-foot flatcars without chain tie-downs, were supplied in lieu of the 89-foot chain-tiedown flatcars with 24

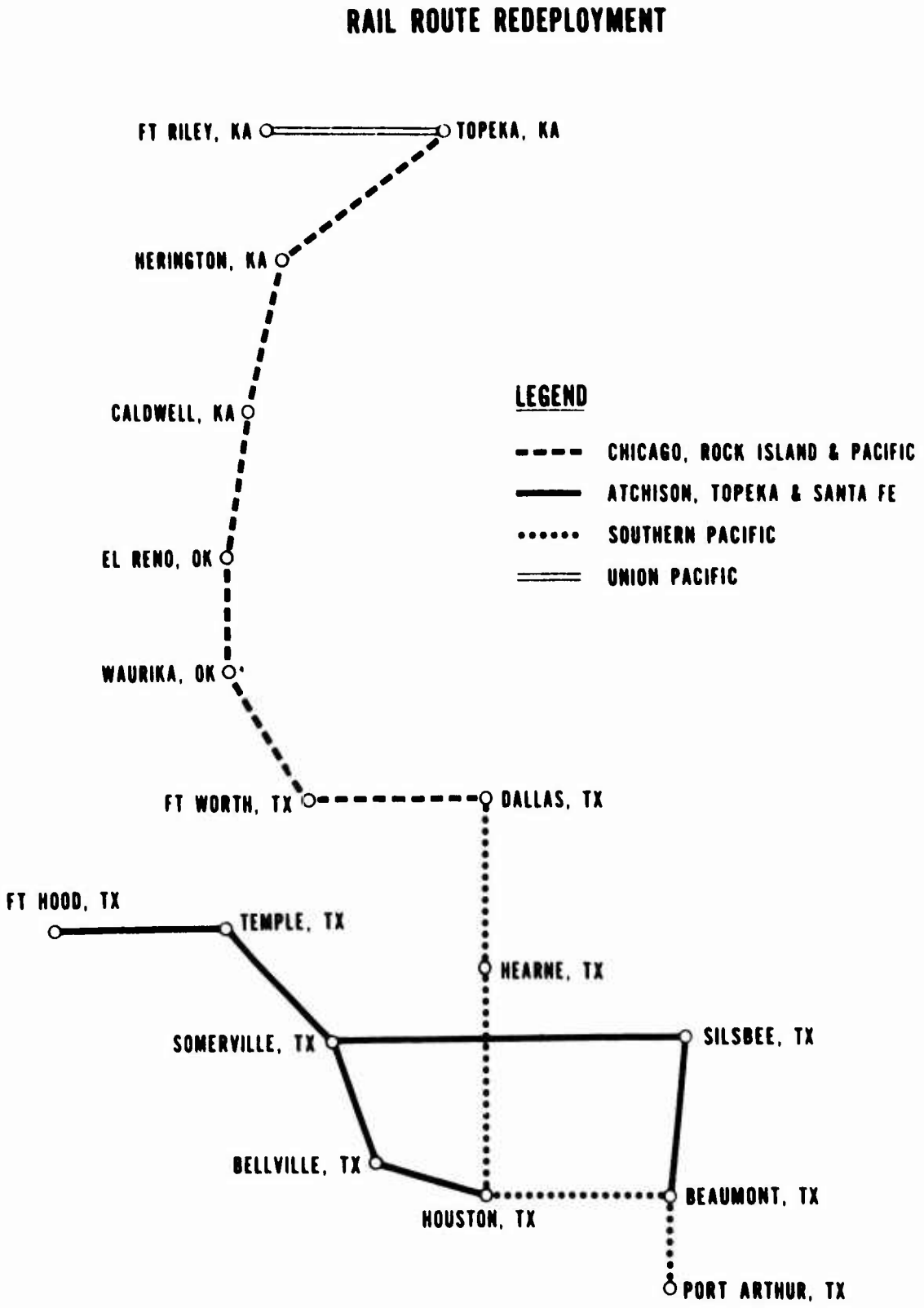


Figure 10-1. Rail route redeployment.

chain sets. These substituted railcars required more blocking and bracing effort than had been planned. The Southern Pacific representative was advised that equipment received was not in accordance with prior agreements, and that acceptance of substitute rail equipment did not constitute acknowledgment of satisfaction. As a result, Southern Pacific representatives waived demurrage charges where the delays experienced were caused by the substitutions. The failure of the Southern Pacific to provide the proper equipment necessitated delay in the planned schedule for train 1 (Fort Riley) and substitutions of alternative schedules. This deviation from the rail outloading plan was effectively and efficiently accomplished; however, train 1 required 5 days to complete loading because a large number of cars required wire rope and conventional blocking and bracing in order to secure equipment.

(b) Equipment shipped by rail was loaded and secured by personnel of P. C. Pfeiffer Company. Contractor personnel performance during rail loading operations was inconsistent and sometimes slow. Constant surveillance by MTMC personnel was required to insure contractor compliance with AAR loading rules.

(c) Further complicating rail outloading, a large number of vehicles arrived at the port with unsecured equipment in cargo beds. This equipment had to be either banded to the vehicles or removed and placed in CONEX containers before railway officials would accept the vehicles. This procedure consumed considerable time and should have been performed by the units in Europe prior to shipment.

(d) MTMC personnel provided rail outloading advice to the loading contractor and interfaced with the respective rail carrier inspectors to insure that the proper techniques and standards were used in loading military impedimenta.

(2) Commercial highway. Twenty commercial trucks delivered equipment to home installations. The substitution of certain types of railcars, with the shifting of the priorities for unloading ships, necessitated the use of additional motor carriers to transport military impedimenta bound for Fort Riley.

(3) Military convoys. Nine military convoys, totaling 602 vehicles, moved from Beaumont to Fort Hood. Two other military convoys, consisting of 23 and 8 vehicles, respectively, cleared the port for Bergstrom AFB and Fort Polk, Louisiana.

5. Factors influencing ship discharge and port clearance. Many factors, both internal and external to the MTMC CONUS redeployment effort, contributed to or detracted from its success.

a. Detailed planning, including the publication of an operations plan that specified individual and organizational responsibilities, was largely responsible for the success of redeployment debarkation efforts. Significant ship-arrival schedule changes and resulting ship-discharge and rail/highway port-clearance modifications were quickly and effectively accommodated.

b. Owning units failed to properly and adequately secure the equipment loaded in vehicle cargo spaces during redeployment preparations in assembly areas in Europe. While some of these faults were corrected at the SPOD, additional problems encountered at the SPOE resulted in significant expenditures of time and effort. For instance, serious safety shortcomings were observed when oxygen and acetylene cylinders were haphazardly loaded in vehicle cargo beds. Rail inspectors insisted that all of these discrepancies be corrected prior to accepting a railcar load for onward movement.

c. Although ship discharge and staging operations progressed satisfactorily, they would have been more efficient if a sufficient number of maintenance contact personnel, with more equipment and vehicle drivers, had been available at Beaumont. However, the radio communications available between MTMC ship-discharge supervisors and maintenance contact team leaders were satisfactory, permitting effective use of available personnel.

d. Railcar substitutions made by the Southern Pacific Railway were not in consonance with a previously agreed-to substitution rule. Substituted railcars required blocking and lashing additional to that planned, and slowed port clearance operations.

6. Summary and recommendations. Redeployment ship-discharge and port-clearance operations were successful despite major ship-schedule changes and deviations from planned rail loading procedures. The professionalism and dedication of all participants overcame these difficulties.

a. The detailed port operations plan published by Gulf Outport clearly defined responsibilities and insured the success of the effort.

b. Recommendations resulting from this effort include:

(1) Hold regular MTMC/rail-carrier meetings to preclude or circumvent possible problems and standardize railcar inspection procedures.

(2) When ordering railcars, stipulate not only car length and type but also car designation. Use of this additional railcar information

may prevent rail companies from furnishing railcars that are unsuitable. While substitution agreements must be accepted, tighter control of substitution rules appears warranted.

(3) Use the Gulf Outport deployment operations order as an example in planning future REFORGER-type deployments.

(4) Emphasize the necessity of units properly stowing and securing cargo in truck beds and trailers.

SECTION XI

CONUS LINE HAUL TO HOME STATION

1. General.

a. A REFORGER 79 deployment movement plan was developed by MTMCEA utilizing rail, commercial motor transport and military motor convoy to clear the ports of Beaumont and Port Arthur, Texas, and to return equipment to home stations. The rail movement consisted of six special trains. Commercial highway line-haul movements involved 20 commercial trucks. Military convoy movements consisted of nine convoys of vehicles to Fort Hood, Texas.

b. Redeployment rail planning was conducted during a rail conference held 8 November 1978. Rail carriers were later notified by message stipulating types and quantities of required railcars, required dates for delivery of railcars to the ports of Beaumont and Port Arthur, the number of trains, train routes, destinations, and which carrier would be responsible for each train. The constant changing of ship arrival dates required numerous alterations in time schedules.

2. CONUS line haul to home station.

a. Highway movement. Commercial highway movements originating at Beaumont were destined for installations shown in table 11-1.

TABLE 11-1
COMMERCIAL HIGHWAY MOVEMENTS FROM
BEAUMONT TO HOME STATION

No. of Trucks	Destination	Departed	Arrived
3	Fort Leonard Wood	15 Mar 79	09 Mar 79
1	Fort Devens	15 Mar 79	19 Mar 79
1	Fort Jackson	20 Mar 79	26 Mar 79
1	Hunter AAF*	26 Mar 79	16 Apr 79
1	Fort Lewis	26 Mar 79	02 Apr 79
13	Fort Riley	26-28 Mar 79	29-30 Mar 79

*Shipment delayed by truckers strike.

b. Rail movement.

(1) Rail communications net.

(a) MTMCEA maintained rail movement status charts at the MTMCEA Operations Center in Beaumont to control and monitor the progress of rail movements to Forts Hood and Riley.

(b) To monitor the progress of each train, a telephone communications net with the rail carriers was utilized to report each train as it passed given check points.

(2) Problems with trains en route to Forts Hood and Riley.

(a) One DODX flatcar loaded with two M60 tanks became inoperable at Port Arthur. After the railroad completed the repairs, the car was moved into the Port Arthur railyard for switching; there, it collided with another railcar. Both tanks broke free from their lashings and shifted on the DODX railcar, crushing the forward metal chock blocks under each vehicle. One M60 tank sustained damaged to a gun tube. After inspection, both tanks were resecured and the railcar was included in train number 4; it then proceeded to Fort Hood without further incident.

(b) A DODX flatcar in train number 2 was removed from service near Alvin, Texas, due to brake problems. The car was repaired and included in train number 3.

(c) Train number 3 was delayed for about 6 hours near Silsbee, Texas, due to a broken rail.

(d) The one Fort Riley train was involved in a collision with a cement truck near Houston, Texas, on 21 March. The train sustained no railcar or cargo damage, and proceeded on its way after a delay of 1 hour 50 minutes.

(3) Rail operations. Movement data on the six special trains transporting REFORGER 79 cargo to Forts Hood and Riley are presented in table 11-2.

(4) Train makeup. The makeup of trains, by railcar type, originating at the ports of Beaumont and Port Arthur is shown in table 11-3.

(5) Rail cargo loads. The consist of cargo loads of the six redeployment trains is shown in table 11-4.

TABLE 11-2
CONUS RAIL MOVEMENTS FROM
BEAUMONT TO HOME STATION

Train No.	Destination	Departed		Arrived		Hours of Transit Time
		Planned	Actual	Planned	Actual	
1	Fort Riley	21 Mar	201640 Mar	23 Mar	232330 Mar	79.2
2	Fort Hood	16 Mar	151335 Mar	17 Mar	161615 Mar	26.4
3	Fort Hood	16 Mar	162400 Mar	17 Mar	172330 Mar	23.3
4	Fort Hood	22 Mar	230420 Mar	23 Mar	231745 Mar	13.25
5	Fort Hood	25 Mar	242000 Mar	26 Mar	251200 Mar	16.0
6	Fort Hood	28 Mar	262150 Mar	28 Mar	271100 Mar	14.2

TABLE 11-3
TRAIN MAKEUP FOR REDEPLOYMENT

Train No.	DODX	Gondola	53' Std Flat	53'6" CTD Flat	56'3" CTD Flat	60' CTD	68' CTD	89' CTD	89' TOFC	Total
1	1*	7	5					36		49
2	32	2		4	1		4	16	3	62
3	17	6				31	1	1		56
4	19	7		9		13		3		51
5	4	6		14		11	2	10		47
6	13	9		4		22	2	13	4	67
Total	86	37	5	31	1	77	9	79	7	332

*Guard car.

TABLE 11-4
CONSIST OF REDEPLOYMENT TRAINS

Train No.	MILVAN	Wheeled Vehicles	Tracked Vehicles	CONEX	Other	Total Vehicles
1		168	5	55	3	231
2		12	144		3	159
3		10	112	60	6	188
4		8	101	66		175
5		16	92	60		168
6	7	32	106	35	20	200
Total	7	246	560	276	32	1121

(6) Railcar turnaround. Railcars utilized in trains 2, 3, and 4 were returned to Beaumont after being offloaded at Fort Hood. This practice insured that sufficient railcars of proper types were available for the makeup of trains 5 and 6.

(7) Cargo condition. Installation transportation officers at Forts Hood and Riley reported that all REFORGER 79 rail-transported cargo arrived at their installations without significant damage.

c. Military convoy movements.

(1) Military convoy operations were conducted by the 180th Transportation Battalion, 13th COSCOM. The convoy route was the same as that used for the deployment phase of the exercise. All convoys originated at the port of Beaumont with vehicles from Port Arthur infiltrated to Beaumont for convoy organization. Convoys departed the port area at times compatible with the Beaumont city-traffic flow. The Beaumont Police Department provided escort through the city. Each convoy consisted of approximately 70 vehicles, broken into two serials. Driver personnel were transported by commercial bus from Fort Hood to Beaumont the day prior to convoy departure. Repairs, including major parts replacement, to make vehicles roadworthy for convoy operations, were performed in the port area. A number of inoperative M151 vehicles were loaded into the beds of cargo trucks for transport to Fort Hood. Other nonrepairable vehicles that were scheduled for convoy movement were shipped by rail on train number 6.

(2) A summary of redeployment convoys from Beaumont to Fort Hood is contained in table 11-5.

(3) Certain REFORGER 78 cargo was returned with REFORGER 79 equipment and was shipped to Bergstrom Air Force Base and Fort Polk via military motor convoy, as depicted in table 11-6.

d. Summary and recommendations.

(1) Although some problems were encountered during CONUS line-haul operations, they were not of military origin, and did not detract significantly from the overall success of the operation.

(2) All phases of the CONUS line-haul operation were performed either on time or ahead of schedule.

TABLE 11-5
REDEPLOYMENT CONVOY OPERATIONS
BEAUMONT TO FORT HOOD

Convoy Number	Qty Vehicles	Departure Time	Arrival Time
1	70	150832	152130
2	66	160655	161923
3	65	170745	171830
4	78	180735	181915
5	60	200350	202240
6	66	210857	212230
7	72	240841	242020
8	74	250725	251940
9	51	260702	261900

TABLE 11-6
REDEPLOYMENT CONVOY OPERATIONS
REFORGER 79 EQUIPMENT FROM BEAUMONT, TEXAS

Destination	Qty Vehicles	Departure Time	Arrival Time
Bergstrom Air Force Base	23	151300	15
Fort Polk, Louisiana	8	151300	15

(3) One M60 tank was seriously damaged during switching operations at Port Arthur, Texas.

(4) It is recommended that any railcars separated from special military train service be marked "Do Not Hump" or in a manner that will alert the railroad switching personnel to the requirement for special handling.

SECTION XII

REFORGER 79 DOCUMENTATION PROCEDURES

1. General.

a. REFORGER 79 documentation procedures were further modified over those used in previous REFORGER exercises. The primary objective of the modified procedures was to: reduce the administrative burden on deploying units to the absolute minimum and yet insure adequate control and accuracy of documentation data throughout the exercise.

b. REFORGER 79 documentation revisions were:

(1) Development of a modified transportation control number (TCN).

(2) Reinstitution of the transportation control and movement document (TCMD), but only as a CONUS port receipt and damage notation form.

(3) Elimination of unit marking of shipping data on equipment, with the exception of the unit identification code (UIC).

(4) Reduction of submission time for unit equipment list (UEL) to not later than 15 days prior to the arrival of cargo at the SPOE.

(5) Delay in transmission of the advance documentation file (pre-punched TCMD cards) from the SPOE to the Eastern Area Management Information Systems Office (EMISO) until physical receipt of equipment.

2. Deployment documentation, CONUS (fig 12-1).

a. The deploying units were required to:

(1) Submit a unit equipment list (UEL) to MTMCEA not later than 15 days prior to the arrival of the cargo at the SPOE. The UEL included:

(a) Water commodity and cargo exception code

(b) Type of pack

(c) UIC

(d) Bumper, CONEX, or MILVAN number

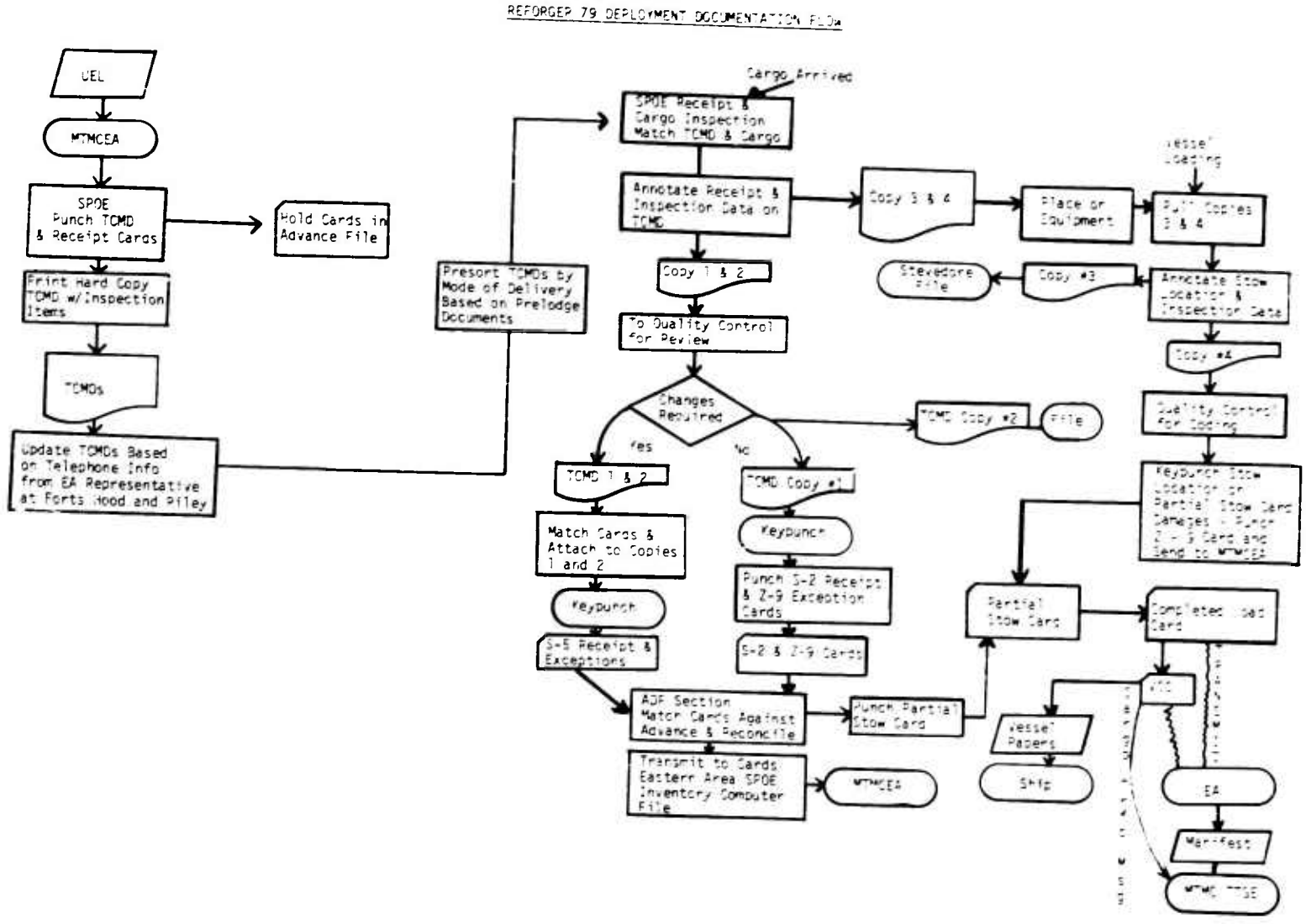


Figure 12-1. REFORGER 79 deployment document flow.

(e) Mode of travel from POD

(f) Unit/European assembly area designator

(g) Noun description of item on container contents

(h) Model number

(i) USA number

(j) Length, width, and height in inches

(k) Pieces, weight, and cube

(l) POD

(2) Insure that vehicles and containers were properly stenciled in accordance with AR 750-58, Painting, Camouflage Painting, and Marking of Army Materiel.

(3) Stencil the UIC on each item of equipment and container.

(4) Mark all sensitive and hazardous cargo.

b. The installation transportation officers assisted the units and prepared Government bills of lading (GBL), for each commercial truck or railcar load shipped. Representatives from MTMCEA were present at Fort Hood and Fort Riley during outloading to assist in documentation and marking, and for liaison with the SPOE.

c. Upon receipt of the UELs from the deploying units, MTMCEA reconciled them with a FORSCOM COMPASS list of deploying cargo to verify UICs and equipment by type and number. These data were forwarded to the SPOE.

d. The SPOE used information from the UELs to construct a TCN for each item as follows:

(1) Positions 1-6--UIC.

(2) Positions 7-11--vehicle bumper number, MILVAN or CONEX serial number. (Zeros preceded the number when necessary to insure utilization of each position.)

(3) Position 12--coded mode of travel from the SPOD. ("A" was for air, "C" for convoy, and "K" for rail.)

(4) Positions 13-14--European assembly area designator (either 01 or 02).

(5) Positions 15-17--constant "XXX" or a trailer bundle. The UEL was also used to keypunch advanced TCMD cards and surface export cargo system (SURS) receipt cards, which were verified and held in an advance file by TCN sequence. The MTMCEA representatives at the outloading installations telephonically reported any variances or changes to the UEL so that the advance file could be updated prior to equipment arrival at the SPOE. TCMDs were printed for each item, and they were used exclusively as internal control documents by the SPOE. Preprinted information on the TCMDs enhanced their use as receipt and exception forms.

e. Prior to the arrival of the cargo at the SPOE, TCMDs were sorted by mode of delivery, based on advanced copies of GBLs, convoy consists and waybills. Further sorting by individual railcar number and expected convoy serial arrival enabled the cargo receipt team to rapidly match arriving cargo with the TCMDs.

f. Four copies of these preprinted and presorted TCMDs were provided by the port documentation section to the staging and receipt section prior to the arrival of the cargo. Cargo receipt teams matched arriving cargo with the TCMDs. The TCMDs were then posted with the vessel/staging location code, placed in waterproof pouches (also inscribed with the vessel staging code), and attached to the cargo. If no match between TCMD and cargo was made, a TCMD was prepared by the cargo receipt team and later entered into the cargo documentation file. Unused TCMDs were returned to the documentation section for reconciliation. Cargo inspection teams checked the cargo and noted, on the TCMD, exceptions and damages in excess of $250 (IAW AR 735-11, Accounting for Lost, Damaged and Destroyed Property). Copies 1 and 2 were detached and returned to the documentation section and copies 3 and 4 were returned to the pouch on the cargo.

g. When copies 1 and 2 of TCMD arrived at the documentation section, they were reviewed for changes, and the receiving activity and date were added. The advanced file was then updated with receipt, damages, and change information; it was reconciled, and partial stowcards and cargo receipt reports were prepared. These initial receipt data were transmitted to the Eastern Area Management Information Systems Office (EMISO) for normal Surface Cargo Reporting System (SURS) documentation processing.

h. During vessel loading, stevedore cargo checkers removed TCMD copies 3 and 4, noted damages and stow location, and retained copy 3. Copy 4 was returned to the documentation section, where partial stow cards

were completed. Stowage and damage information was forwarded to EMISO, which prepared the vessel manifest. The SPOE prepared the vessel papers and cargo traffic message.

3. Deployment documentation, Europe.

a. MTMCEA transmitted the deployment manifest to MTMC TTGE shortly after ship sailing. The data from this SURS-generated document were entered into the computerized DA standard port system (SPS) used in Europe. Since some data fields did not match, manual manipulation of data was necessary. This in itself required approximately 200 man-hours. SPS generated the port clearance plan for each vessel and became the primary source of information for documentation and planning. To facilitate internal control, the documentation contractor derived the disposition instruction list from the port clearance plan.

b. The key feature of the port clearance plan and the disposition instruction list was a 1- to 3-digit post number that identified each item on each vessel. This post number was sequentially generated by the port cargo-clearance plan. The disposition instruction list was manually prepared in UIC and noun-description sequence. Using this list, the post numbers were quickly chalked on the cargo during precheck of cargo prior to discharge. This simple numbering system greatly facilitated cargo identification and control. Checkers used post numbers to "key" back to the port cargo-clearance plan and to rapidly produce a tally list. Checking slowdowns were precluded because these post numbers (and therefore deployment cargo) could be rapidly identified.

c. As in CONUS, with few exceptions TCMDs were not used to control movement. Rail, convoy, and sea/air interface cargo moved from the SPODs to ultimate destinations without the burden of individual TCMDs. TCMDs were used only to enhance control and movement of sensitive cargo, and the few commercial highway moves.

d. The manifest transmitted to the SPOD was accurate and timely. The reported error rate of approximately 1 percent was low. The most serious of these errors were in mode determination (from the SPOD to the assembly areas), which were corrected at the SPOD prior to vessel discharge. Additionally, cargo-dimension errors contained in the unit-generated UEL were frequently replicated throughout the documentation system. The most common error was failure to report nonstandard shelters on trucks. Ultimately these errors hindered SPOD rail clearance planning.

e. The last-minute unit changes at the SPOD of sea/air interface cargo experienced in REFORGER 78 were not repeated. This cargo passed smoothly through the SPOD to the airfield for onward movement.

f. As mentioned in Section VII, sensitive cargo was consolidated aboard the SS American Corsair and blockstowed at one location on the ship. Uncertainty about the number of pieces of sensitive cargo arose at the SPOD. The manifest identified 47 pieces of sensitive cargo. The DD Form 1907, Signature and Tally Record, identified 46 pieces. Upon discharge, 49 pieces were found. The consolidation and blockstow by the SPOE permitted the SPOD to rapidly reconcile the differences.

4. Redeployment documentation, Europe.

a. As part of the policy to keep unit documentation participation to a minimum, new TCNs were not assigned to equipment during redeployment. With few exceptions, TCMDs were not used, and revised UELs were not prepared. The use of the old TCNs substantially invalidated the information provided in positions 12 to 14 of the TCN (the mode of travel from the SPOD and the assembly area designator). The nonuse of TCMDs did not impact on operations; however, the lack of a new or revised UEL, with its TCMD type of data did impact on operations. Without such a UEL, MTMC TTGE was required to utilize data from the deployment manifest. This information often became inaccurate since dimensions and weights frequently changed when individual vehicles and CONEXs were not loaded; also, vehicle dimensions were not reduced in the same manner as during deployment.

b. The lack of detailed rail consist messages in Europe hampered effective documentation. Upon departure of each train from Germany, the 4th Transportation Brigade notified MTMC TTGE of the number and type of items loaded; however, they did not specifically identify each piece by TCN. Although the information provided was essential for embarkation planning, it did not facilitate documentation. The lack of advance detailed information inhibited the SPOD from rapidly identifying and documenting each item as it arrived. This was not the case for equipment arriving by barge. The Rhine River Terminal identified each item in a sailing cable/barge manifest.

c. Problems with sensitive cargo were also experienced during redeployment. Control and coordination of the movement of sensitive cargo to the SPOD was unsatisfactory. The total number of sensitive pieces was reduced approximately 35 percent through consolidation or by shipment of sensitive items aboard returning passenger aircraft. This information was not provided the SPOE, and port operators did not discover the

discrepancies until the cargo arrived. Also, the guards on the train carrying the sensitive cargo had signed for sensitive railcars, but not for the sensitive items on the railcars. Individual documentation for sensitive cargo had not been prepared. One CONEX, identified as sensitive, was empty, and another, full of sensitive items, was not identified. It was necessary for MTMC TTGE to reconcile all discrepancies.

d. MTMC TTGE's internal control system during redeployment was essentially the same as for deployment. A post numbering system was used. The documentation contractor used the SURS-generated cargo load list, which had been updated based upon reported equipment changes, additions or deletions. Post numbers were manually assigned to this list. The system functioned as for deployment. The primary reason for a post number system was to facilitate checking; however, two problems occurred which hampered TCN identification and therefore post numbering and checkling.

(1) The less experienced civilian cargo checkers of the Rhine River Terminal had difficulty identifying key data elements (that is, vehicle type, UIC, and bumper number), assembling them into a TCN, and matching them against the cargo load list to establish a post number. Although Rhine River Terminal was unable to match some post numbers with equipment, they did report sufficient data on the sailing cable/barge manifest to expedite this procedure at Rotterdam.

(2) Damage to and loss of vehicle bumpers occurred during the field exercise. This caused the obliteration and loss of the bumper numbers essential to TCN construction. A missing bumper number triggered a reconciliation of USA numbers, vehicle type, and UIC against available information to get a bumper number and TCN; this consumed considerable time and effort.

5. Redeployment documentation, CONUS. No significant documentation problems occurred in CONUS during redeployment. Documentation procedures were essentially the reverse of deployment procedures. Individual TCMDs were again used for internal control.

6. Summary and recommendations.

a. Summary.

(1) Modification of MILSTAMP unit deployment documentation procedure proved successful. The dual objective of reducing the deploying unit's administrative burden while improving accuracy and control

were attained. The five major revisions (para 1b) to previous REFORGER modified documentation procedure provided further insight into the dynamics of unit move documentation.

(2) Accuracy of cargo data is essential to the documentation process. The reduction of the required submission time of the UEL to 15 days substantially contributed to accuracy. This reduced the number of changes that had to be made to the data base due to equipment substitution, additions, deletions, or weight/dimension changes; however, as in previous REFORGER exercises, inaccuracy was still a problem. The UEL contained many weight and dimension errors. Accuracy deteriorated further during redeployment when weight and dimension changes were not reported.

(3) Use of the new TCN was successful. It highlighted information essential to unit moves, that is, item identification and routing guidance. Several problems were noted:

(a) The entire TCN was never stenciled on the equipment. When needed it was constructed from available data. This requirement hindered checking, particularly when inexperienced checkers were used.

(b) The bumper numbers, a key element of the TCN, were frequently missing or obliterated due to exercise damage.

(c) Since new TCNs were not assigned for redeployment, only the item identification portion of the TCN remained valid.

(4) When unit equipment is deployed during a major exercise such as REFORGER, is there a need for individual item control and accountability? Although the conditions of a unit deployment are complex, the conditions for cargo control are very favorable. Unit equipment moves in isolation from other cargo, by convoy or unit trains and dedicated ships, through the same SPOE and SPOD. With the exception of sensitive and hazardous cargo, individual item control and accountability may be an unnecessary, costly, and time-consuming burden on the defense transportation system. It may detract from, rather than support, the successful accomplishment of the mission.

(5) The internal documentation control procedures exercised by MTMC Gulf Outport (TCMDs) and MTMC TTGE (post numbers) were different. Both were effective, appropriate for local conditions, and responsive to the port commanders. These two systems reflected the inherent trade off between the degree of control and the resources necessary to maintain control. During redeployment, the lack of advanced information

from the unit, in the form of an updated UEL, and from the 4th Transportation Brigade, in the form of detailed rail consist, hindered cargo receipt and control.

(6) Problems with the movement and documentation of sensitive items occurred during deployment and redeployment. During deployment there were inconsistencies in documentation. Since information was routinely passed from the SPOE to the SPOD, and sound operational procedures such as block stow were employed, the inconsistencies were rapidly reconciled. During redeployment this flow of information from the unit to the 4th Transportation Brigade to the SPOD did not occur. Firm control over sensitive items was not established until the SPOE assumed responsibility for the cargo.

b. Recommendations. It is recommended that:

(1) The deploying unit submit the UEL NLT 15 days prior to the arrival of the cargo at the SPOE.

(2) The deploying unit accurately report weights and dimensions of cargo.

(3) The redeploying unit submit, prior to arrival of the cargo at the SPOE, a new updated UEL or an updated SPS document.

(4) The concept of a documentation system without individual item control and accountability be tested during REFORGER 80.

(5) All REFORGER participants comply with existing policy concerning documentation of sensitive cargo.

SECTION XIII

REFORGER 79 WEATHER

1. General.

a. The REFORGER 79 exercise was markedly affected by severe winter weather--the worst recorded in Europe in the last 15 years. The weather significantly disrupted vessel discharge and rail loading schedules.

b. Throughout the deployment phase, the temperatures seldom rose above 25 degrees Fahrenheit. As a result, snow and freezing rain formed a sheet of ice that covered the loading area of each port--Amsterdam, the Netherlands, and Antwerp, Belgium. Rail switches became frozen with snow and ice, which made it difficult to spot railcars. Host-nation personnel cleared the snow and ice from the rail switches and railcars before loading could begin (fig 13-1).

Figure 13-1. Contractor personnel removing snow and putting down sand for drive-on operations.

c. During the deployment phase, severe weather forced internal closure of both ports. Freezing rain forced rail loading operations to cease in Amsterdam from 1630 hours, 20 January, through 1200 hours, 22 January, and in Antwerp, from 1530 hours, 23 January, to 0700 hours, 24 January.

d. By redeployment time, the weather had improved, but the thawing ground formed mud in unit staging areas. The mud hampered the cleaning of equipment and its subsequent loading for rail movement to the port. In port, the equipment still showed effects from the weather, as many vehicles were deadlined and many required maintenance assistance in starting.

2. Environmental effects on operations.

a. REFORGER vessels, the SS Maine, the SS American Corsair, and the USNS Meteor, discharged at the port of Antwerp, Belgium; the GTS Admiral William M. Callaghan discharged at the port of Amsterdam, the Netherlands. Due to the subfreezing temperatures at the ports, as well as the in-transit time from home station, approximately 65 to 70 percent of the vehicles required assistance to start. In the staging areas, it was again necessary to have maintenance personnel start vehicles for movement to the rail loading site. Because of a lack of personnel, the requirement to have maintenance assistance at both locations slowed operations.

b. Snow and ice on the quay slowed the movement of cargo, as drivers had to use extreme caution in moving on the slick surfaces. Because the severe winter had caused a shortage of salt throughout Europe, sand was used to cover icy areas, but it was only marginally effective.

c. Rail outloading was slowed because arriving railcars had to be cleared of accumulated snow (fig 13-2). Vehicles moving up rail ramps lost traction because their wheels spun through the sand. Deadlined vehicles had to be towed onto railcars; this procedure consumed at least 1 hour of effort per deadlined vehicle.

d. A container crane and gantry crane, not part of the stevedoring contract, were used to load deadlined tracked vehicles onto railcars in Amsterdam, the Netherlands. Additional costs resulted from their use.

3. Effects of environment on personnel.

a. Weather conditions, as noted, required that extreme caution be exercised by supervisors to avoid vehicle accidents and cold weather injuries to personnel. In Amsterdam, portable trailers were used for

warming personnel. At both ports, hot coffee and soup were provided at regular intervals by host-nation army personnel.

Figure 13-2. Belgian Army personnel clearing ice from rail tracks in port area.

b. The most routine operation--opening an engine compartment and adjusting engine start controls--was time-consuming because it had to be performed with mittened hands. Also, the space required to insure access to the controls to adjust them for cold-weather starting was increased, because bulky cold-weather clothing was worn. Military drivers were rotated in shifts to minimize the physiological and psychological effects of the severe weather.

4. Environmental effects on vehicles.

a. Approximately 65 to 70 percent of vehicles required maintenance assistance to start upon arrival at the SPOE. Some had dead batteries and some required the replacement of batteries and relays, starter switches, and starter solenoids.

b. Some licensed military drivers did not know the proper starting procedures. This resulted in many unsuccessful attempts to start a vehicle or to keep it operating in the cold weather. Maintenance assistance personnel were then required to work on the vehicles. Throughout the entire REFORGER operation, the 10-series operator manuals, which give the proper cold weather start procedures, were not available. Without the manual, the vehicle driver had to rely on memory, and this may explain some of the vehicle-starting failure.

5. Lessons learned.

a. Vehicles must be properly maintained, in accordance with the appropriate 10-series manual, to insure successful cold-weather operation.

b. Batteries must be serviced prior to deployment.

c. Written instructions for cold-weather starting and operation must be made available for each type of equipment to be operated by unit drivers.

d. Sufficient supplies of salt and other ice-dissolving chemicals must be available in any winter exercise.

e. The number of maintenance personnel and amount of equipment must be increased for a winter exercise, to insure that deadlined and hard-starting vehicles can be handled along with the normal RORO operations.

SECTION XIV

PROBLEM AREAS

1. General. MTMC participation in REFORGER 79, from initial planning in early 1978, through unit rail-outloading training during the summer of 1978, to the return of deploying unit equipment to home station in March of 1979, was characterized by thoroughness and imaginative application of sound transportation principles While each REFORGER exercise has honed the MTMC mobility capability, each exercise has also presented unique challenges and opportunities. REFORGER 79 was no exception. Those problems considered most significant during REFORGER 79 are highlighted here. Several less significant problems are discussed in the preceding sections and should be noted. Although each problem in itself is not critical, the combination of two or more problems could become significant.

2. Hazardous and sensitive cargo. This one area presented more problems and created more opportunity for potentially serious incidents than did any other area. To varying degrees during each of the four REFORGER exercises in which MTMC played a major role, hazardous and sensitive cargo has caused MTMC port operators numerous documentation and handling problems.

a. Sensitive cargo requires extraordinary security and protection. However, such care has not been afforded in all cases, due to the shipper's failure to identify such cargo and/or to document containers in which this cargo is stored. In one instance, a container was marked as containing sensitive cargo only to be found void of any cargo. Such incidents cause considerable consternation for the transportation personnel, for, under these circumstances they then must question all containers, whether marked or not. This area deserves the increased attention of all personnel, most especially of the shipping units, to preclude the compromise or loss of critical materials.

b. Hazardous cargo is potentially dangerous throughout the deployment/redeployment cycle. If inadequately stored and/or commingled, it presents great potential for serious injury to personnel or for damage to other cargo. This potential danger is present during unit rail outloading, during ship loading or unloading, during the ocean voyage, and at all other times where movement and jarring could lead to catastrophic results. Deploying units must become more cognizant of the inherent danger of these materials and follow published safety guidance. The transportation system, likewise, must insure that the deploying units are properly informed of the dangers.

3. Call-forward requirements. In Europe these requirements were not followed. Bad weather, problems obtaining blocking and tie-down materials, and mud in unit assembly areas during redeployment preparations created untold problems during equipment cleaning and redeployment outloading operations. These problems created scheduling difficulties that led to loading trains in a hodgepodge fashion, apparently disregarding the port operator's scheme for loading vessels. Failure to follow call-forward instructions compounded problems in the port area beyond those created by the delayed arrival of a scheduled ship. Because equipment planned for loading at a specific ship location was not available at the time requested, restow actions were necessary.

In such a situation, the capability of the port operator to accommodate all cargo planned for loading decreases markedly. Call-forward procedures and priorities must be adhered to if all equipment is to be loaded aboard ship.

4. As alluded to in paragraph 2 above, the preparation of cargo for redeployment was generally unsatisfactory. Loose equipment was literally thrown into vehicle cargo beds with no attempt made at securement. Many of these discrepancies were corrected during redeployment ship loading in Europe; however, in the press of activity there, not all areas needing attention were noted, so additional securing was performed at the redeployment SPOD. Rail inspectors, for example, refused to accept railcar loads when loose equipment was not secured. This same deficiency has been noted in past REFORGER exercises and apparently little effort has been made to improve the situation. Redeploying units must be instructed that equipment requires adequate securing in cargo beds prior to its placement in the transportation system.

SECTION XV

COMPARISON OF REFORGER 79 PROCEDURES WITH PREVIOUS REFORGER LESSONS LEARNED

1. This section compares the lessons learned during previous REFORGER exercises (1976, 1977, and 1978) with procedures applied during REFORGER 79. These comparisons first identify previous REFORGER lessons learned and then explain the REFORGER 79 procedure and how the previous experiences influenced this latest exercise.

a. Preliminary planning.

(1) Previous REFORGER lessons learned indicated that preliminary planning for large unit oversea deployments should include onsite surveys of installation rail outloading facilities, SPOE and SPOD, and the ships to be used.

(2) MTMC had completed rail outloading surveys of the two primary deployment installations--Forts Hood and Riley--prior to REFORGER 79. The condition of these facilities was reconfirmed through telephone conversations with post personnel. The MTMC series of installation rail outloading capability studies has done much to determine the adequacy of or need for rail improvements at all major Army installations.

(3) As with the most recent REFORGER exercises, MTMC's familiarity with the MSC-nominated vessels negated the requirement for ship surveys. When a last minute ship substitution was required during REFORGER 79, time did not permit an onboard survey of the SS American Corsair; however, previous experience with this ship and available diagrams were adequate to confirm the ship's configuration.

(4) As with the rail and vessel surveys, MTMC familiarity with the ports used during REFORGER 79 negated the requirement for onsite surveys. Available data were sufficient to plan operations in CONUS and Europe.

b. Unit movement data.

(1) Prior REFORGER experience indicated that COMPASS provided the most workable format and baseline for determining transportation requirements.

(2) Again, as in past REFORGER exercises, initial planning data were furnished as unit-generated equipment listings and later were followed up with a COMPASS printout. COMPASS provides a most usable format that permits adjustments from a known baseline, and its continued use should be stressed. Unit equipment lists (UEL) were, however, a satisfactory format for final loading data and cargo documentation information. Both COMPASS printouts and UEL are valuable for specific phases of transportation planning.

c. Port organizations. Difficulties with the port organization experienced during REFORGER 76 at Norfolk, Virginia, have not recurred. All subsequent deployments have originated at port facilities where MTMC was in firm control, with lines of responsibility clearly defined.

d. Movement documentation procedures.

(1) Attempts to simplify and reduce cargo document requirements at deploying unit level, and within the port system, where possible, have been successful since REFORGER 77. Each succeeding REFORGER has resulted in innovative procedures, each an improvement on the preceding system.

(2) REFORGER 79 unit documentation was held to an absolute minimum; the units submitted only the UEL, GBL, and waybills for rail and commercial highway movement documentation. The results of this system appear satisfactory, with further improvement possible. One area that continues to demand extra effort is unit documentation of sensitive and hazardous cargo--the one documentation area that was not satisfactory during REFORGER 79.

e. Use of vehicle cargo space (VEHCAR).

(1) The use of available VEHCAR space has been an area of concern during all REFORGER exercises. Subsequent to REFORGER 76, added emphasis was placed on this subject, and marked improvement was noted during REFORGER 1977 and 1978 exercises, but further improvements are possible.

(2) REFORGER 79 VEHCAR usage was on a par with that of the previous year. Obvious incidents of nonuse were noted. With the use of VEHCAR, both line-haul and ocean shipping space can be saved, as fewer CONEX- or MILVAN-type containers would be required. This area continues to demand emphasis by deploying units and transportation planners and managers.

f. Technical assistance teams.

(1) Subsequent to REFORGER 76, MTMC organized and offered rail loading training and rail outloading and documentation teams to installations involved in deployment. Few refusals have been received and, in every instance, the installations that accepted the offer did a much better, more accurate job of unit outloading.

(2) REFORGER 79 experience again confirms that MTMC rail loading training and rail outloading and documentation assistance paid dividends. Both the deploying unit/installation and the port operators gained because of the increased efficiency and exactness of deploying unit personnel. The cost of such service is small in comparison with the benefits derived.

g. RORO vessel ramp-to-quay compatibility.

(1) First noted during REFORGER 77, and again during REFORGER 78, were instances of RORO vessel stern and side ramp non-compatibility with the quay. This condition was influenced by tides, vessel load, and quay height and, in turn, resulted in a particular ramp being unusable at a specific time or in not being usable at all, or in the necessity to build special ramp supports or extensions.

(2) This same condition was observed to a lesser degree during REFORGER 79, in both CONUS and Europe. Both shiploading and berthing plans must consider RORO ramp-to-quay compatibility to preclude serious operational problems. Port operators must be cognizant of this potential problem.

h. Cargo discrepancy/exception recording.

(1) As reported after REFORGER 77 and 78 exercises, equipment exception recording appeared to be excessively burdensome and time-consuming. One solution recommended was that only major damage be recorded for such large unit moves.

(2) MTMC authorized its port operators in CONUS and Europe to record only those cargo exceptions that appeared to exceed $250 in cost. This authority greatly reduced the time required to note and itemize the many minor damages that occurred during movement through the transportation systems to Europe and return.

2. Conclusions. Lessons learned during previous REFORGER exercises improved the MTMC deployment posture. In some cases, older methods eventually proved more satisfactory than new procedures instituted; in others, the new ideas were best. Operational problems encountered during REFORGER 79 are covered in the preceding sections.

SECTION XVI

CONCLUSIONS AND RECOMMENDATIONS

1. General. This analysis documents MTMC participation in the REFORGER 79 exercise. It provides an evaluation of MTMC's planning for and execution of its role in the sea deployment of United States forces to Europe. The success of this major exercise attests to the proper planning procedures and staff coordination that have been evident from initial planning in October 1977 to its conclusion. At all levels, priority was given to insuring that unit equipment would arrive on its required delivery date at both the deployment and redeployment destinations. This goal was accomplished with minimal damage to unit equipment. To facilitate future operations involving the sea deployment of United States units, certain aspects of the operation are highlighted. These specific areas require special attention on the part of transportation planners.

2. Specific.

a. Preparation of equipment for oversea movement.

(1) Conclusion. During both deployment and redeployment in the last four REFORGER exercises, deploying units have repeatedly failed to comply with standard procedures for preparing equipment for oversea movement. Similar problems can be anticipated in future exercises.

(2) Recommendation. That MTMC provide written guidance to deploying units, highlighting the proper procedure for preparing equipment for shipment.

b. M113-series tracked vehicle towing shackle.

(1) Conclusion. M113-series tracked vehicles are equipped with T-shackles as part of their basic issue list items (BILI). These shackles are designed to be compatible with the BILI towbar, but are unsuitable as tiedown points during both rail and shipboard loading. These T-shackles were replaced at the SPOE with the tiedown shackles recommended in the transportability guidance technical manual.

(2) Recommendation. That deploying units at origin fit M113-series vehicles with tiedown shackles, as specified in the applicable transportability guidance technical manual.

c. Rail operations.

(1) Conclusion. Rail operations during both deployment and redeployment were generally successful; however, railcar ordering/substitution agreements created problems when some of the railcars provided by the carriers did not meet operational requirements.

(2) Recommendation. That MTMC/installation ITOS be precise when establishing railcar requirement/substitution allowances to more clearly define the limits of railcar acceptability.

d. Planning.

(1) Conclusion. Detailed planning by Gulf Outport, especially the publication of comprehensive deployment and redeployment operations orders, was largely responsible for the success of their operations. The planning enhanced the responsiveness and flexibility displayed by Gulf Outport in responding to the many changes encountered during redeployment.

(2) Recommendation. That Gulf Outport operations orders be used as an example in executing future REFORGER-type port operations in support of unit deployments.

e. Improved coordination.

(1) Conclusion. The AVLBs created transportability problem in Europe. They were removed from their tank chassis and shipped as complete bridge units. Since these units are oversized, special transportation must be obtained for movement in Europe for they are not transportable by rail unless disassembled. Similar problems have occurred during previous REFORGER exercises.

(2) Recommendation. That a cost analysis be conducted to determine the most effective and economical way of shipping AVLBs, and that the results of such analysis be published as guidance for all concerned.

f. Seatrain-type vessels.

(1) Conclusion. The SS Maine, of MARAD's Ready Reserve Force, successfully participated in REFORGER 79. MARAD designed and equipped the vessel with dual heavy-lift spreader bars with a joint capacity of 70 STON. The ship's cranes, using these spreader bars, successfully test-loaded an M60 tank. The spreader bars were used extensively during the exercise to lift heavy equipment.

(2) Recommendation. That MARAD outfit all Seatrain-type vessels with heavy-lift spreader bars to enhance their self-sustaining capability.

g. Driver and maintenance support.

(1) Conclusion. Driver and maintenance elements at the European SPOD were not adequate to support discharge operations or to cope with the severe winter weather. The driver-support elements from the deploying units were poorly structured. The maintenance contact teams from the 21st Support Command lacked sufficient tracked vehicle mechanics and support equipment.

(2) Recommendation. That MTMC TTGE closely coordinate driver and maintenance support to insure adequate response to the demands of both operations and weather.

h. Billeting and meals.

(1) Conclusion. The billeting for supporting military personnel was located approximately 30 kilometers from the SPOD at Antwerp. This distance, particularly during bad weather, caused an extension of working hours that led to increased fatigue and late arrival of essential personnel. Additionally, the meal schedule for military personnel at the port did not coincide with that of the stevedores, and this caused nearly 3 hours of reduced productivity. Both billeting and meal support were disruptive to port operations.

(2) Recommendation. That MTMC TTGE insure that host-nation-provided troop billets are as close as possible to the port, and that meal schedules meet operational requirements.

i. Port selection.

(1) Conclusion. The Lloydkade/Schiehaven Uniport, in Rotterdam, is not well suited for large-scale rail-to-ship RORO operations; it lacks adequate staging areas and rail sidings, and is congested with commercial cargo. Its successful use was highly dependent on the strict adherence to operational plans. Changes in ship scheduling and noncompliance with call-forward instructions created problems in shiploading.

(2) Recommendation. That the limitations of the Lloydkade/Schiehaven Uniport be considered when planning future REFORGER-type exercises, commensurate with contractual/economic considerations.

j. Compliance with call-forward instructions.

(1) Conclusions. The redeploying units did not comply with the call-forward instructions, thus adversely affecting shiploading operations. Redeployment plans called for most equipment to be discharged directly from railcars to the ships. Disruptions in scheduled arrivals caused some unanticipated double handling and staging, as well as divergence from prestow planning.

(2) Recommendation. That redeploying units plan activities to coincide with the requirements of the call-forward instructions.

k. Redeployment information flow.

(1) Conclusion. The success of the modified MILSTAMP documentation procedures of REFORGER 79 was dependent upon timely and accurate data. This information was not always available during redeployment. The units were not required to submit a new or updated UEL to reflect changes in dimensions and weights.

(2) Recommendation. That redeploying units be required to submit new or updated UEL data prior to commencing redeploying outloading.

l. Documentation.

(1) Conclusion. REFORGER 79 documentation procedures were simplified with the objective of reducing the administrative burden on the deploying units while insuring adequate control and accuracy of documentation data. The changed procedures were generally successful. Documentation procedures could be further simplified if individual item control and detailed accountability were not maintained. This would reduce the administrative burden on all system participants.

(2) Recommendation. That during REFORGER 80, individual item control and detailed accountability of cargo not be required.

m. Sensitive cargo.

(1) Conclusion. Incidents of inadequate control of sensitive cargo occurred during both deployment and redeployment operations. During deployment, documentation discrepancies existed. During redeployment, there were numerous shortcomings in documentation and control of sensitive cargo moving between Germany and the SPOE. Similar shortcomings have been noted in all REFORGER exercises since 1976, and this is one of the most serious recurring problems.

(2) Recommendation. That increased command emphasis be placed on the management of sensitive cargo.

n. Winter weather.

(1) Conclusion. MTMC deployment and redeployment activities in Europe were significantly affected by harsh winter weather, which was the worst experienced in the last 15 years. It was a significant factor in disrupting vessel discharge and rail loading schedules.

(2) Recommendation. That winter-operation exercise planning provide time and resources greater than the amount that would be required during more temperate weather.

ANNEX A

DEPLOYMENT SHIP STOWAGE

This annex is divided into four sections--one for each ship used during deployment. Each section provides data on ship utilization and illustrates (template stow plans) how each ship was stowed.

SECTION I TO ANNEX A

SS AMERICAN CORSAIR
Total Cargo Loaded: 2,214 LTON, 9,646 MTON

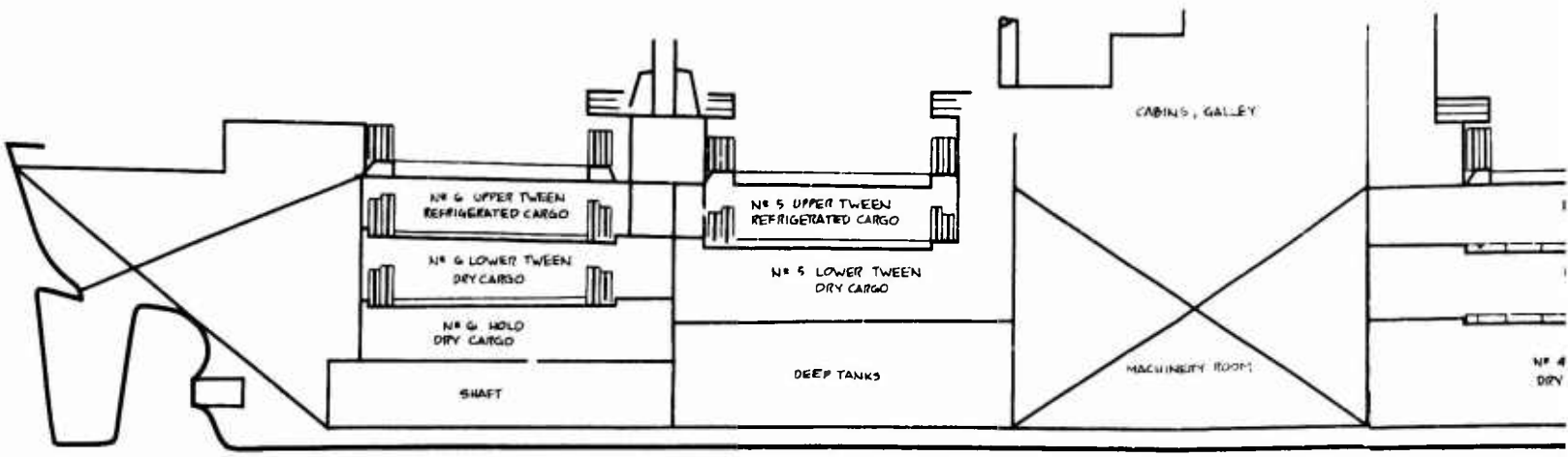
Space Utilization	Capacity (Sq Ft)	Cargo Space Used (Sq Ft)	Percent Filled
Shelter Deck			
1	1,824	1,453.4	79.7
Main Deck			
2	1,938	1,494.0	77.1
3	2,412 (2/3 utilized)	835.0	35.0
4	(-) (not utilized)	(0)	(0)
5	2,343	1,966.9	83.9
6	2,297	1,393.0	60.6
Upper Tween Deck			
1	1,508	826.2	54.8
2	2,678	1,861.1	69.5
3	4,630	3,420.7	73.9
4	4,898	3,540.9	72.3
5	3,397	2,796.7	82.3
6	2,737	2,248.6	82.2
Lower Tween Deck			
1	1,140	1,370.9*	120.3
2	2,615	1,836.0	70.2
3	4,865	3,359.4	69.1
4	5,265	3,757.0	71.4
5	3,354	2,368.1	70.6
6	2,257	1,748.2	77.5
Lower Hold			
2	1,506 (Deep Tanks)	1,774.0*	117.8
3	3,965	4,140.9*	104.4
4	4,803	6,998.4*	145.6
6	1,260	820.0	65.1

Summary

Ship capacity	65,128 sq ft
Total cargo	50,009 sq ft
Ship utilization	50,009 sq ft ÷ 65,128 sq ft = 76.8%
Ship capacity utilized**	61,912 sq ft
Total cargo	50,009 sq ft
Utilization	50,009 sq ft ÷ 61,912 sq ft = 80.8%

*Indicates double stacked cargo and/or use of VEHCAR to attain more than 100-percent space utilization.

**Square footage of one-third of #3, all of #4 main deck and six of eight deep tanks omitted from calculation, as these spaces were not used.



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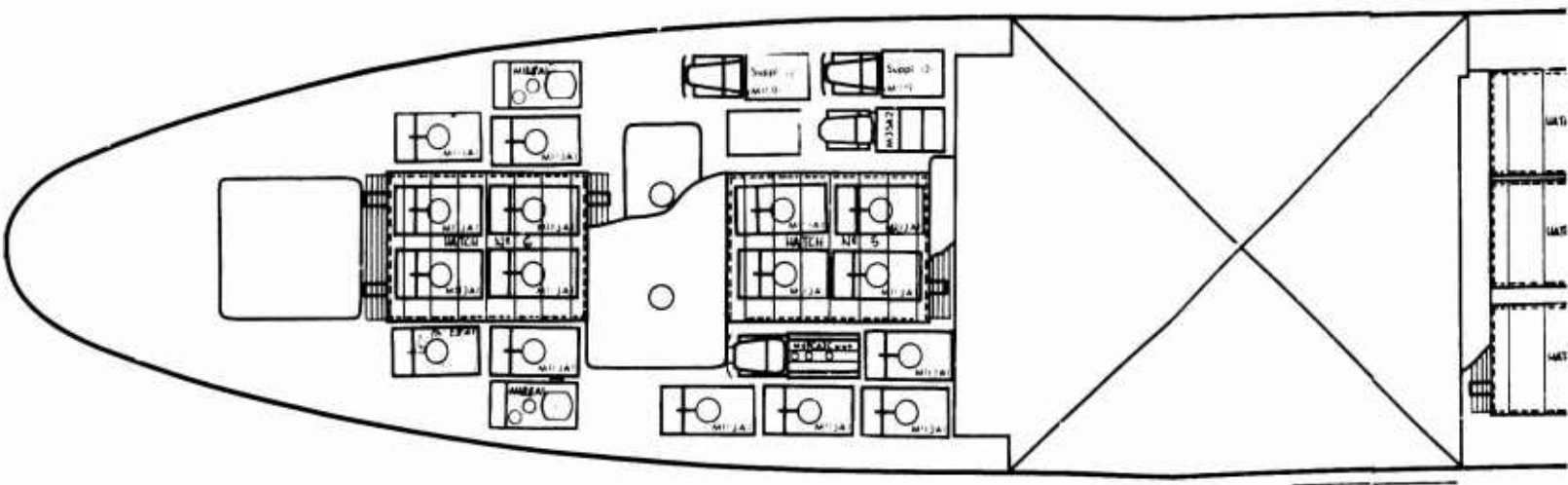

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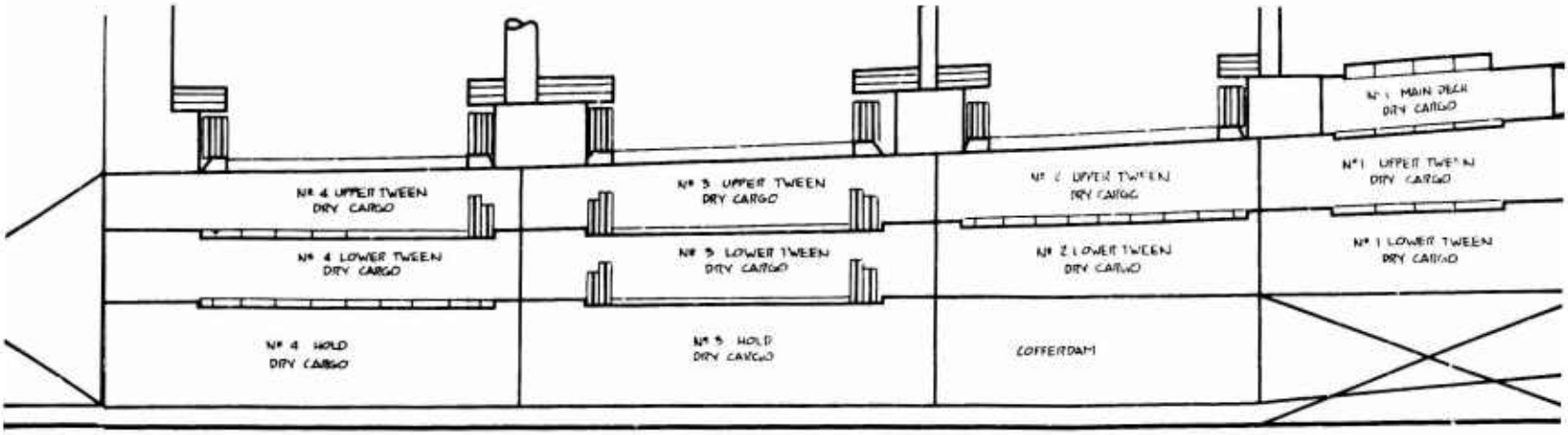

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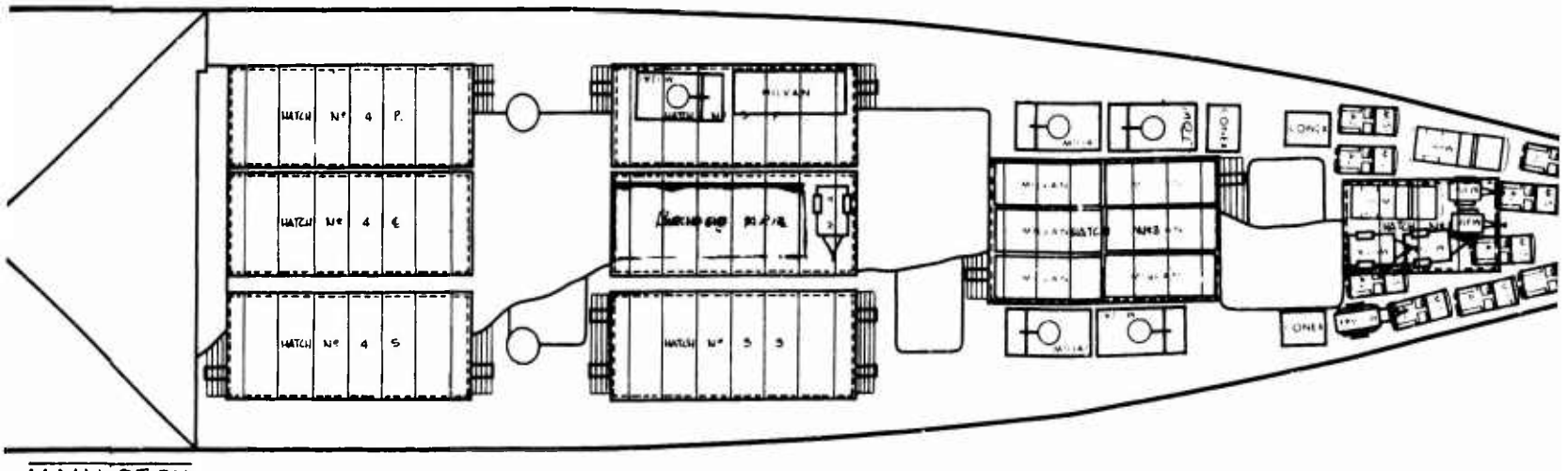

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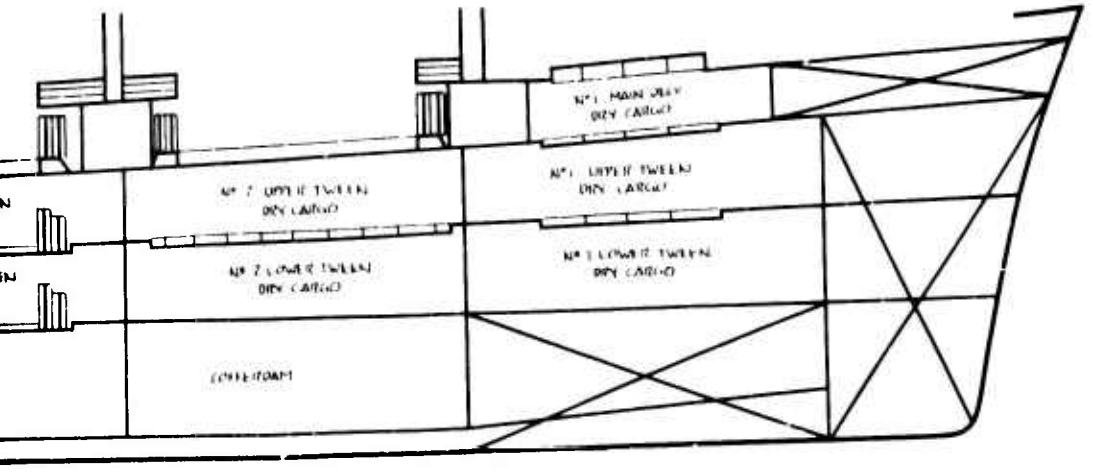
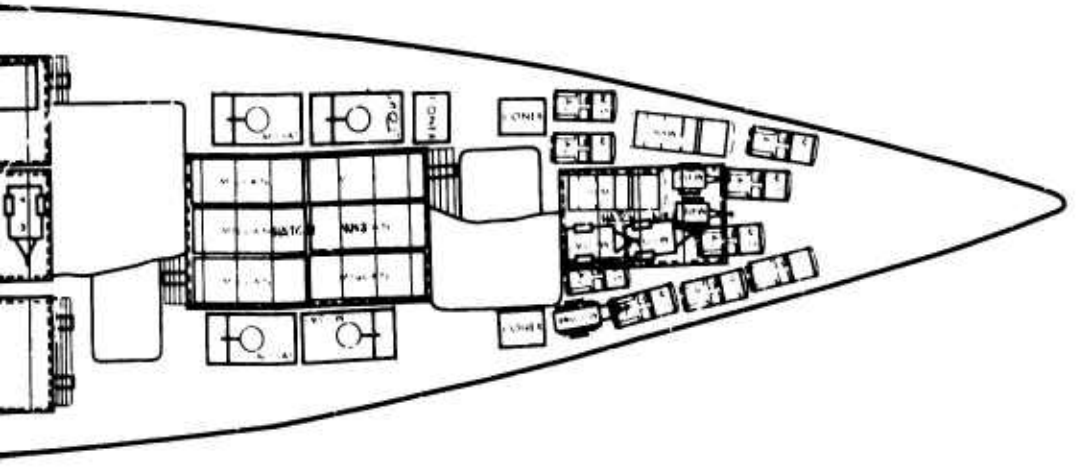
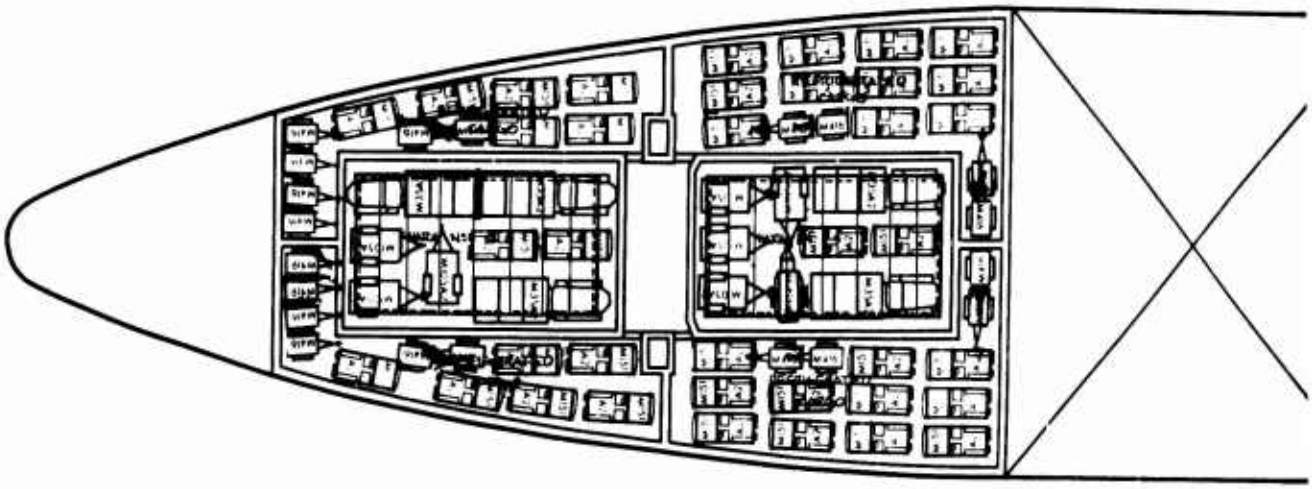
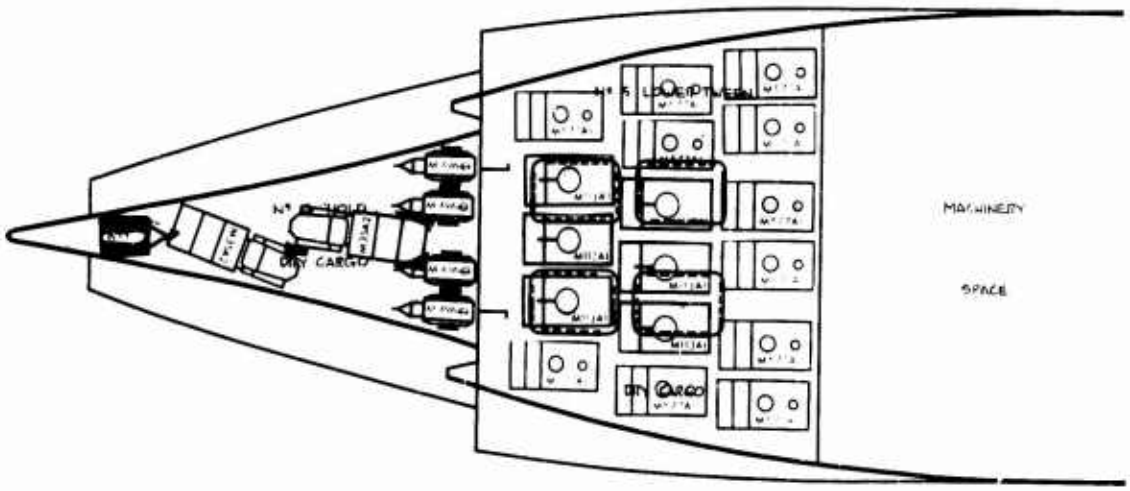




TEMPLATE
FINAL STOW
18 DEC 1978
A M CORSAIR

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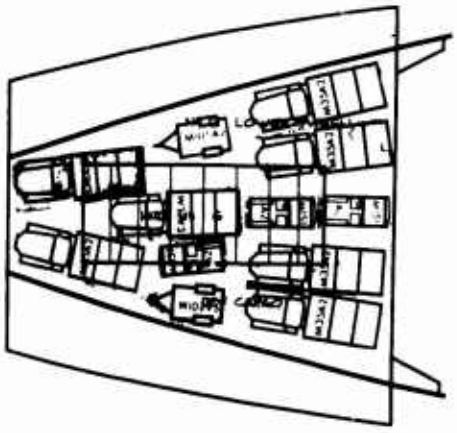
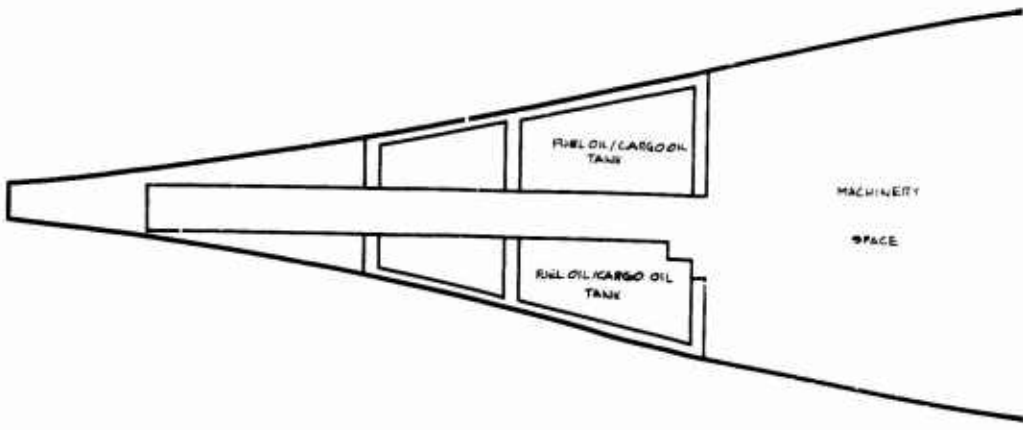
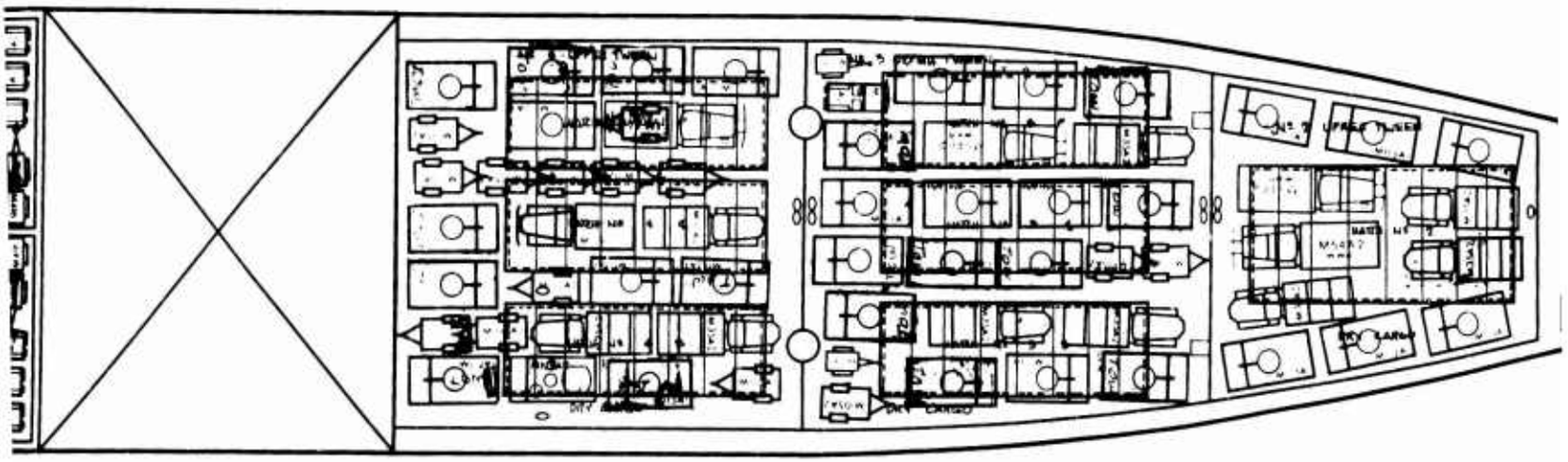
SPACE




FUEL OIL / CARGO OIL TANK
FUEL OIL / CARGO OIL TANK
MACHINERY
SPACE

LOWER TWEEN



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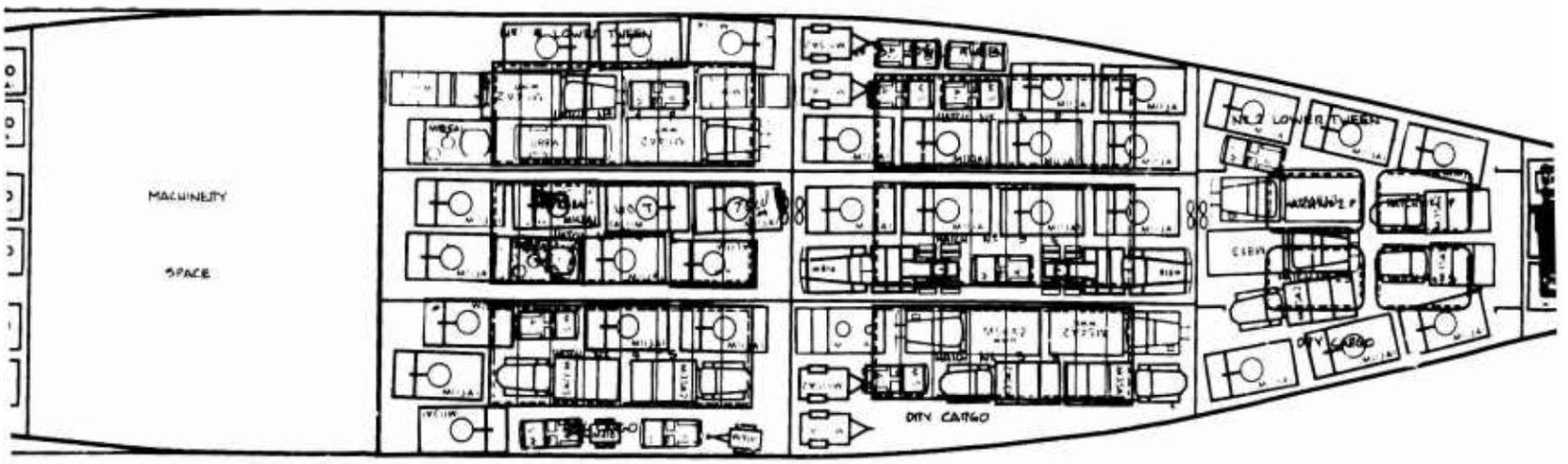

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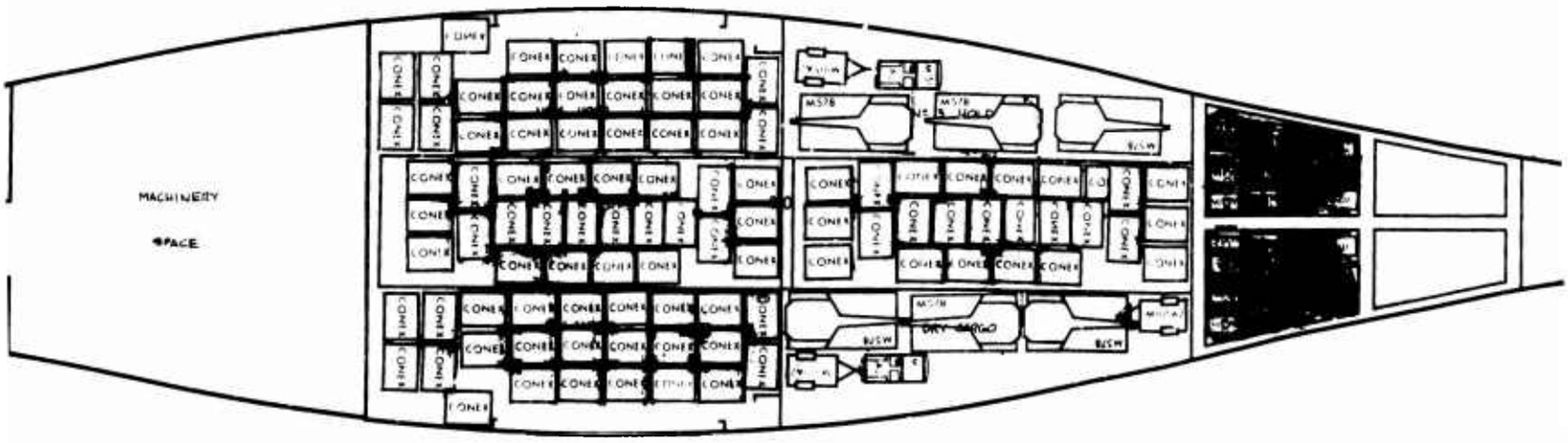

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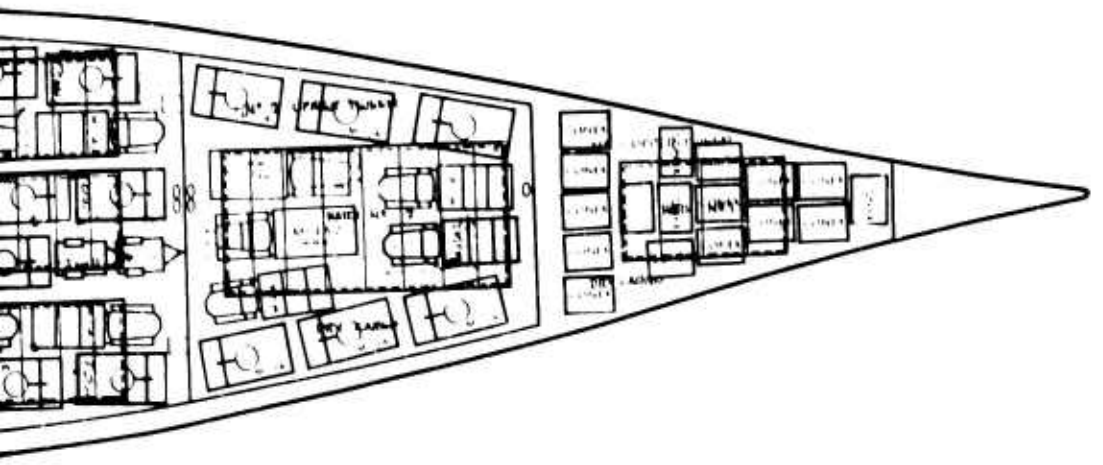
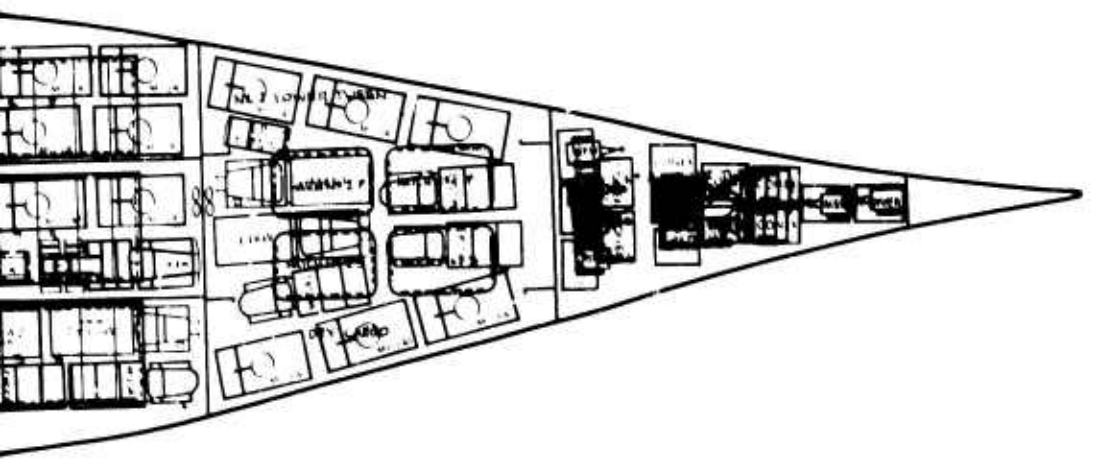
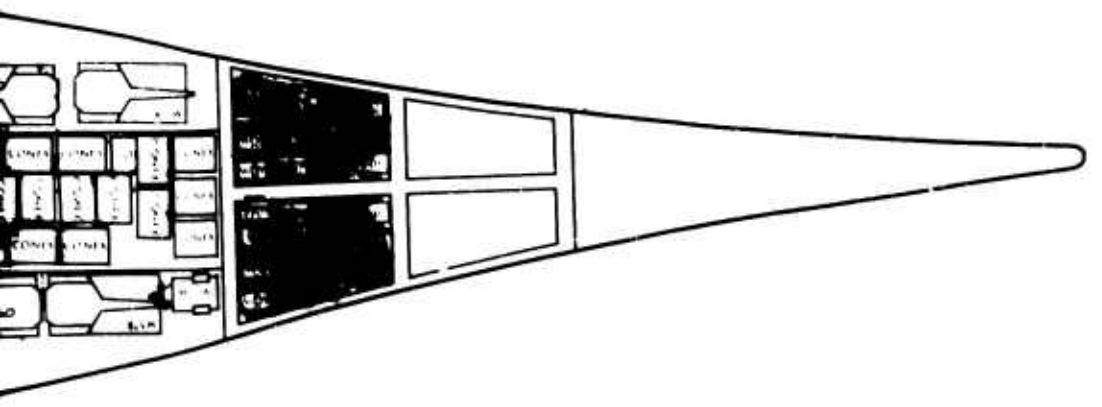






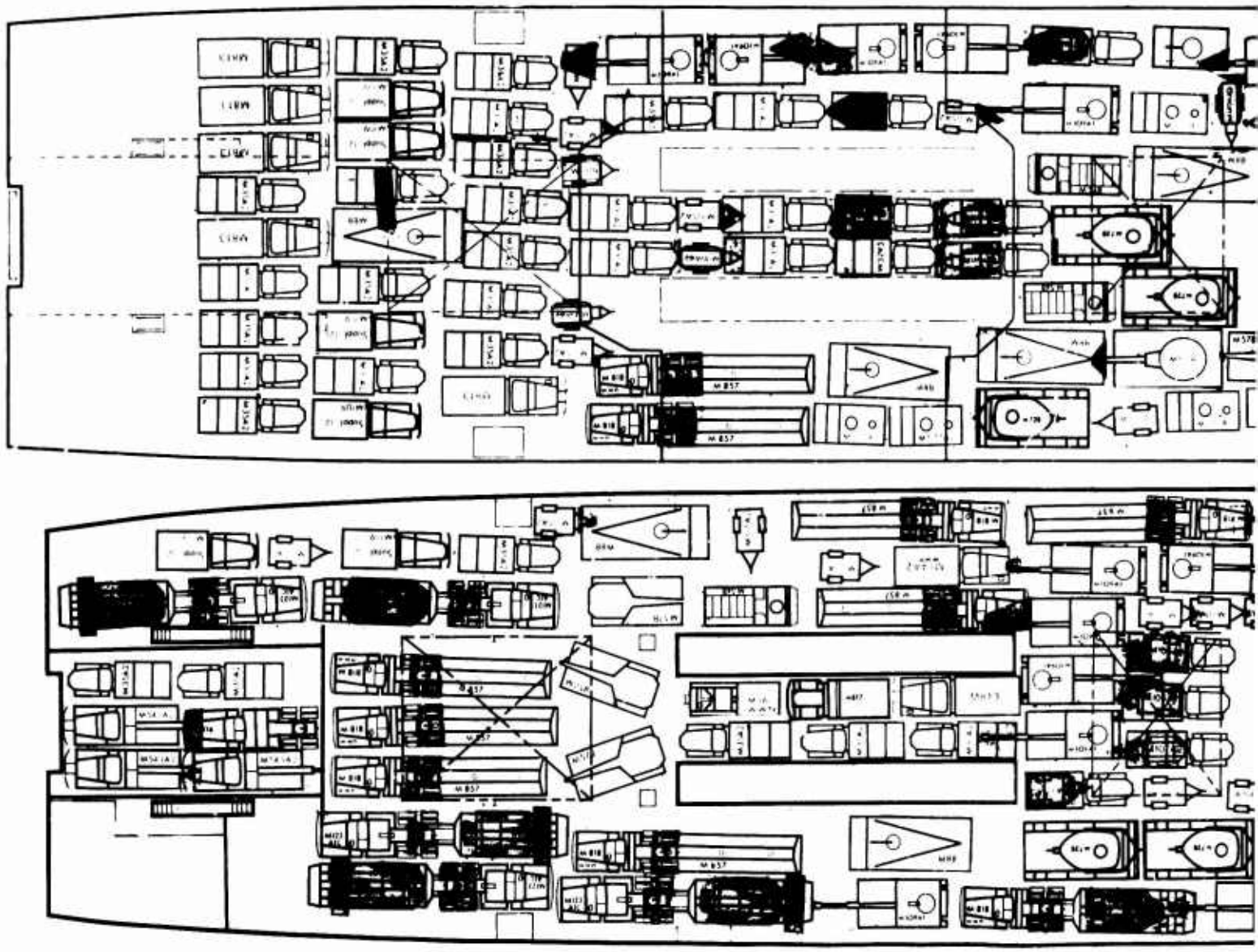
SECTION II TO ANNEX A

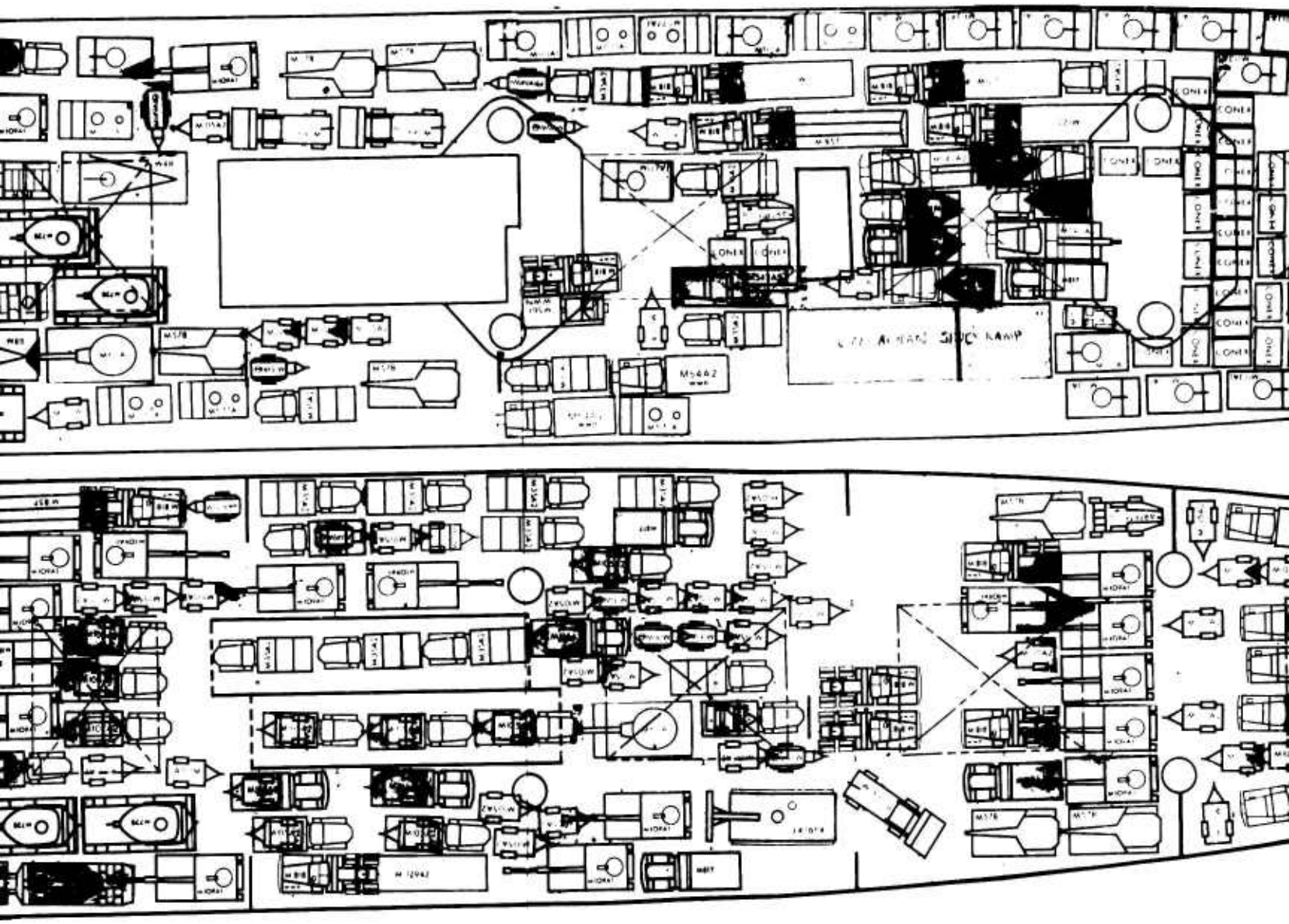
GTS ADMIRAL WILLIAM M. CALLAGHAN
Total Cargo Loaded: 7,124 LTON; 27,888 MTON

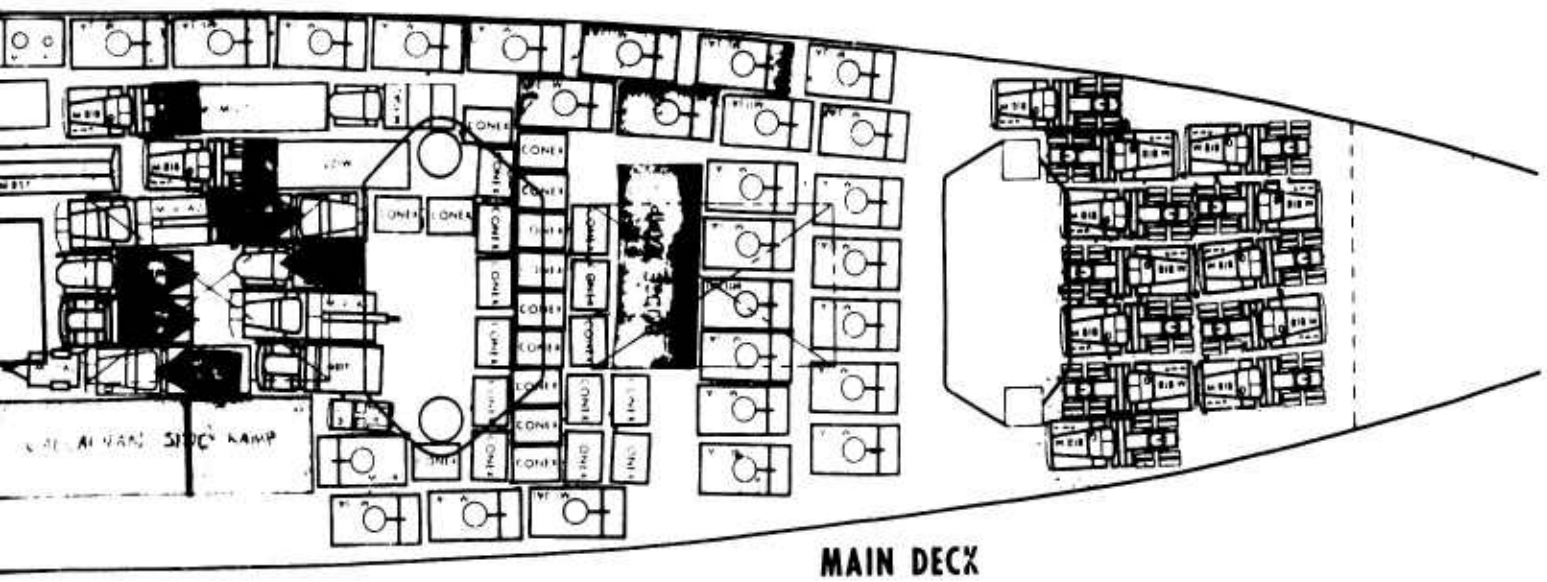
Space Utilization	Capacity (Sq Ft)	Cargo Space Used (Sq Ft)	Percent Filled
Main Deck			
1	3,120	2,658.0	85.2
2	7,623	4,389.0	57.6
3	12,256	9,360.5	76.4
4	8,367	5,054.9	60.4
5	4,136	5,611.2*	135.7
6	6,748	5,612.4	83.2
Upper Tween Deck			
1	1,878	2,334.7*	124.3
2	5,914	4,486.8	75.4
3	11,738	9,291.1	79.2
4	9,735	9,819.7*	100.8
5	3,632	3,021.1	83.2
6	6,178	4,502.5	72.9
7	2,002	2,244.1*	112.1
Lower Tween Deck			
2	4,688	3,849.0	82.1
3	10,526	8,225.6	78.1
4	9,427	6,333.4	67.2
5	3,342	1,806.2	54.0
6	5,754	4,284.4	74.4
7	1,713	1,027.2	60.0
Upper Hold			
2	3,586	2,925.5	81.6
3	10,117	7,438.0	73.5
4	9,929	7,371.6	74.2
Lower Hold			
2	2,729	1,930.1	70.7
3	8,518	6,614.6	77.7
4	8,422	6,116.7	72.6

Summary	
Ship capacity	167,537 sq ft
Total cargo	126,308 sq ft
Ship utilization	75.4%

*Indicates double-stacked cargo and/or use of VEHCAR to attain more than 100-percent space utilization.







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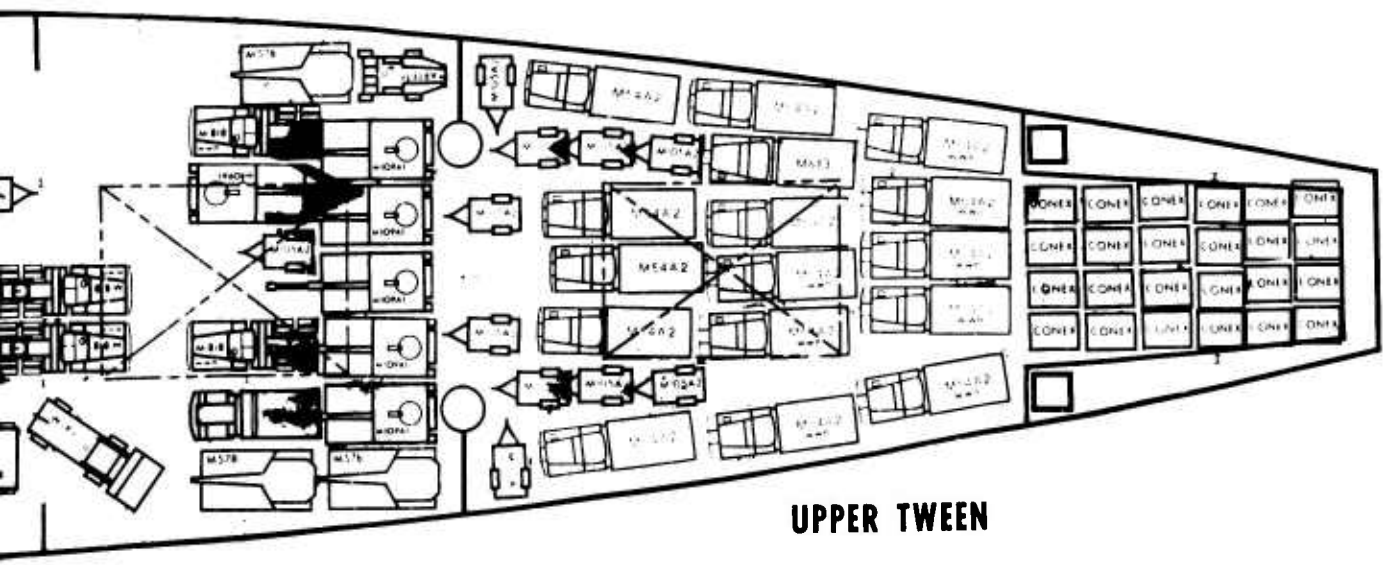
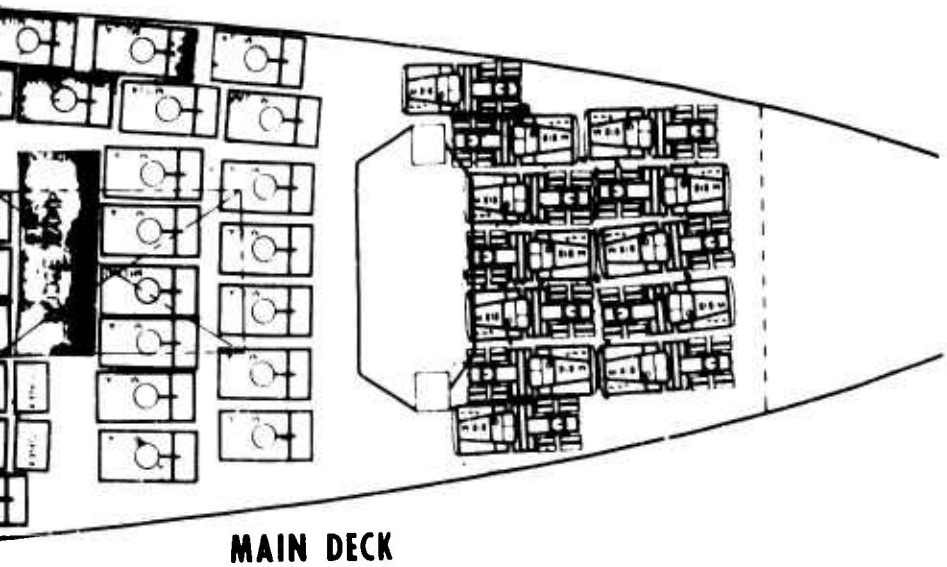


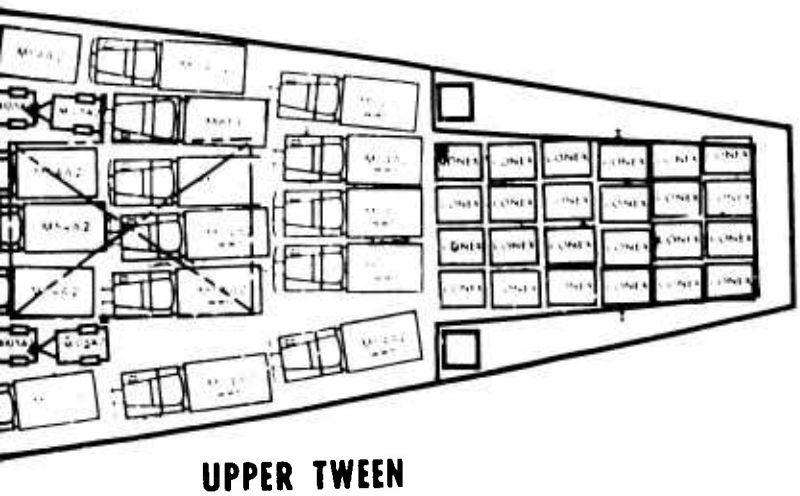
UPPER TWEEN

TEMPLATE
FINAL STOW
30 DEC 1978

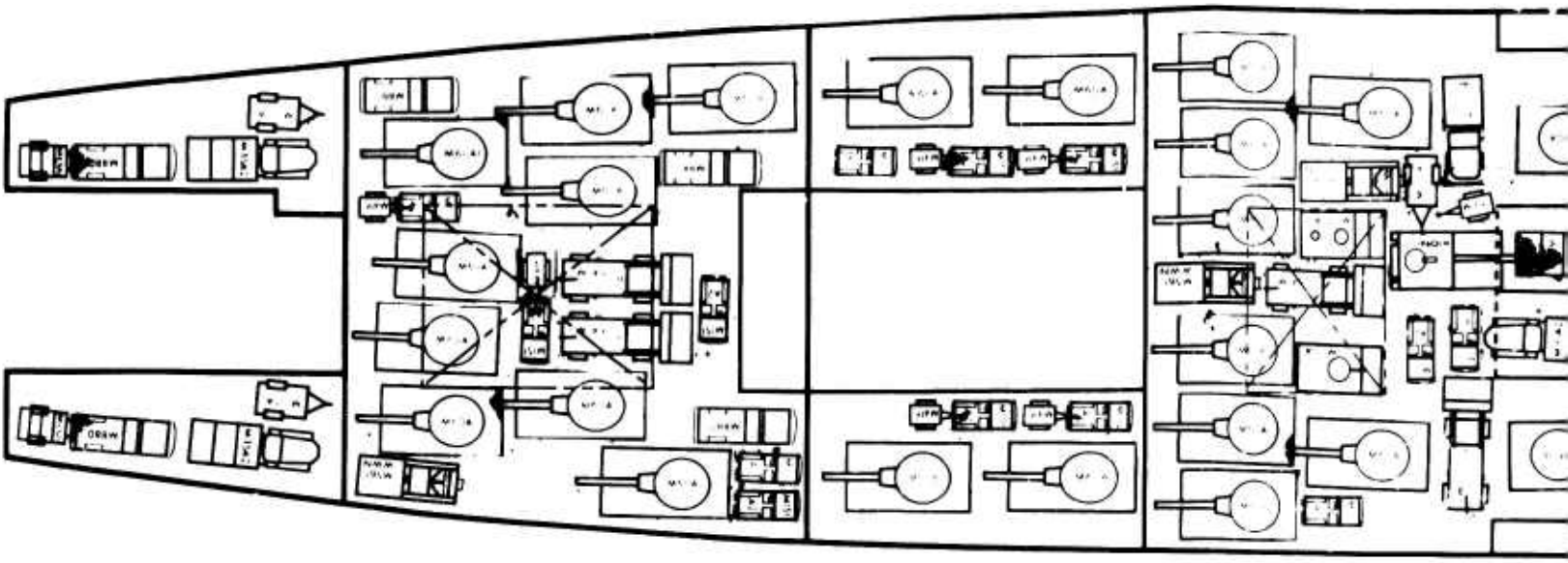
GTS CALLAGHAN

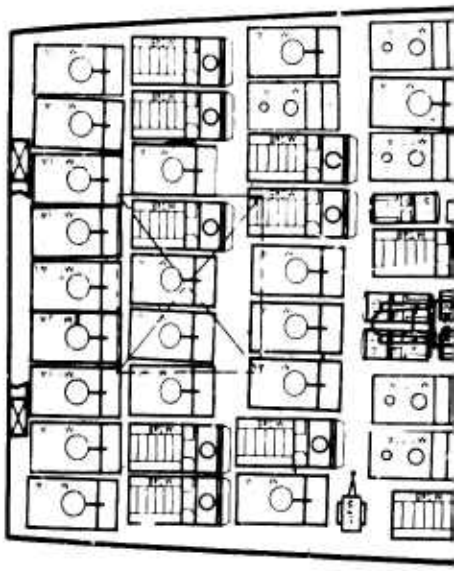


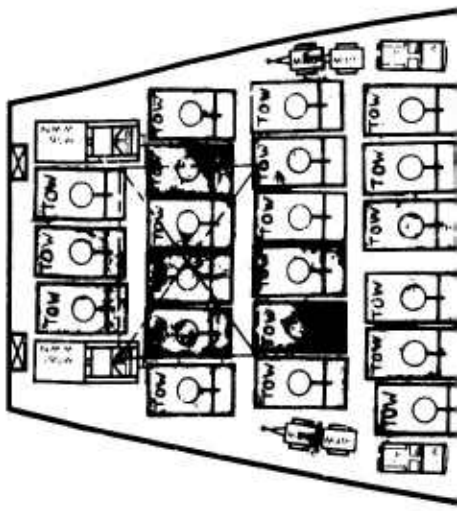
MAIN DECK



UPPER TWEEN



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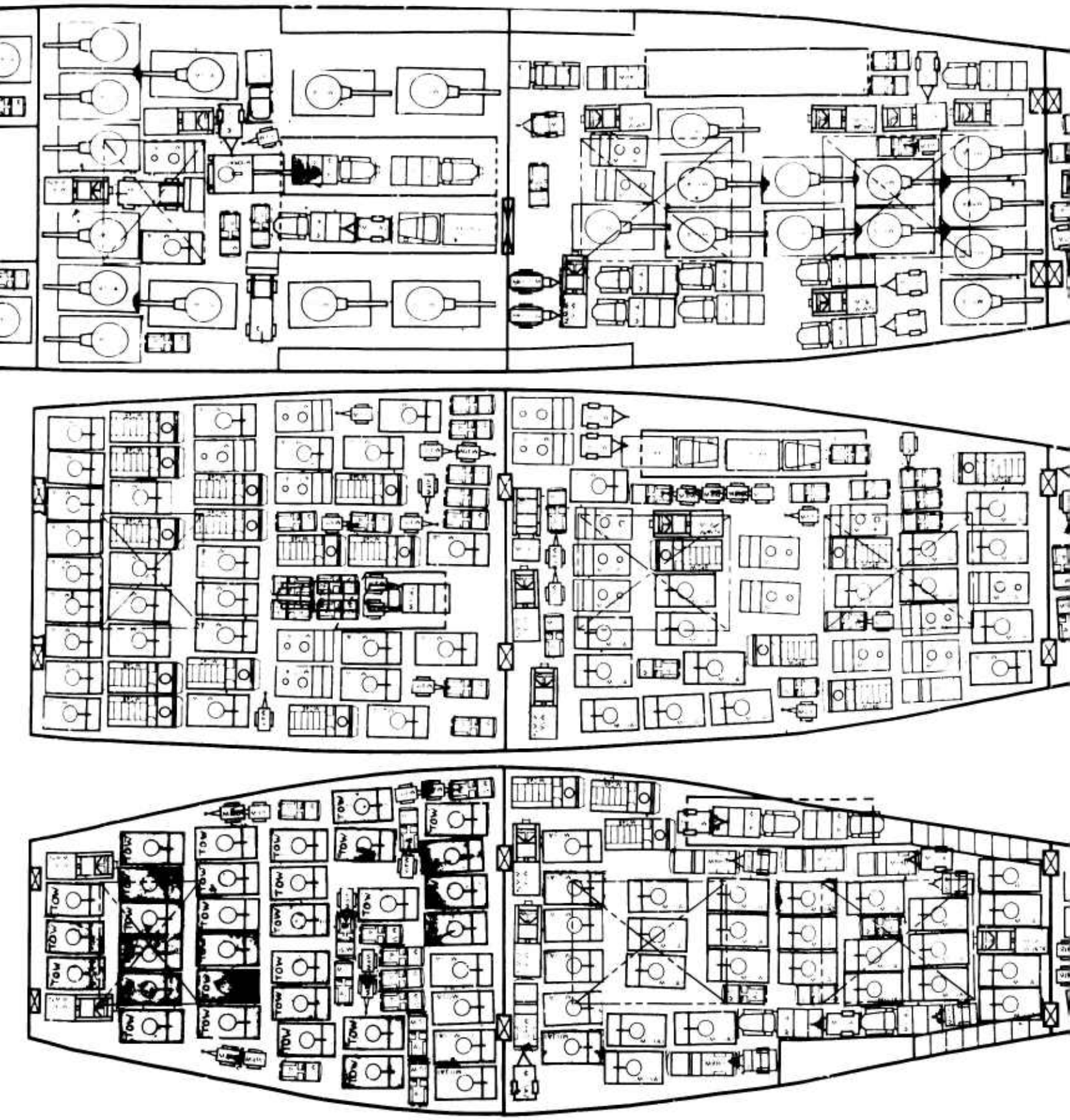
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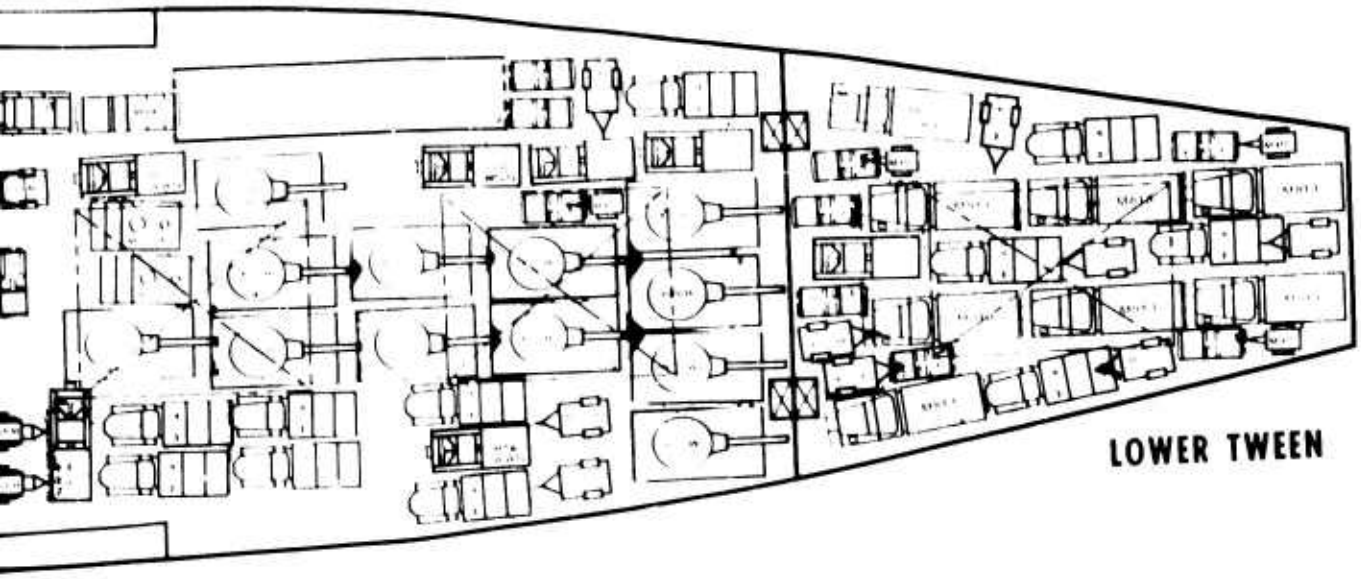
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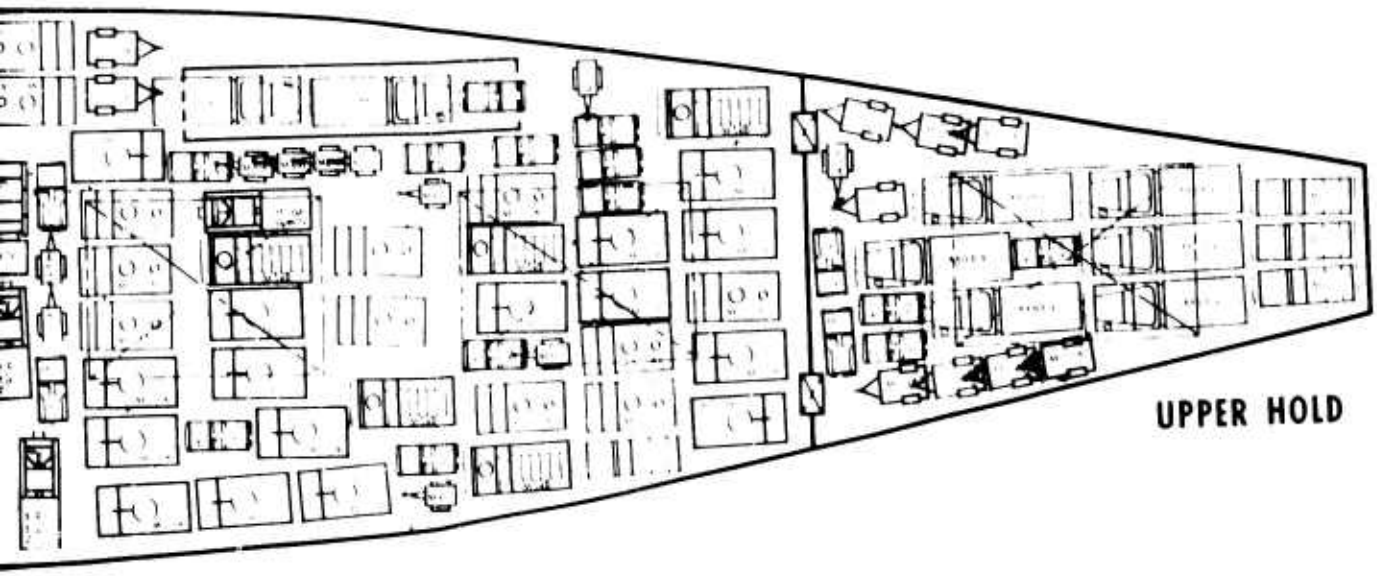
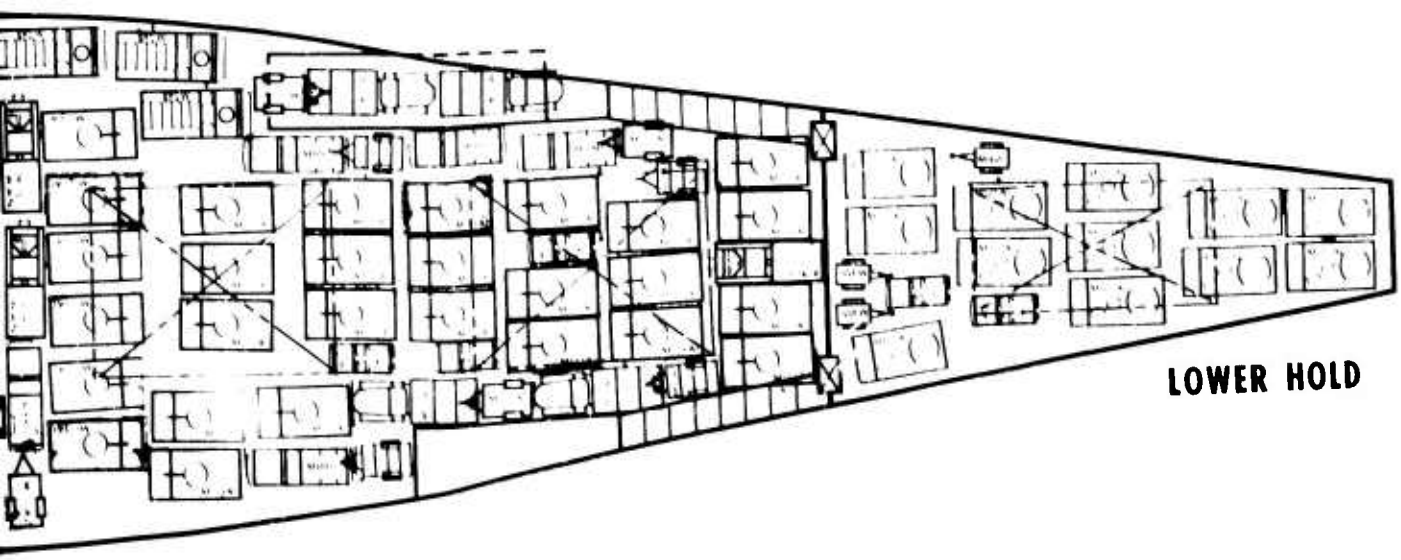

UPPER HOLD


LOWER HOLD

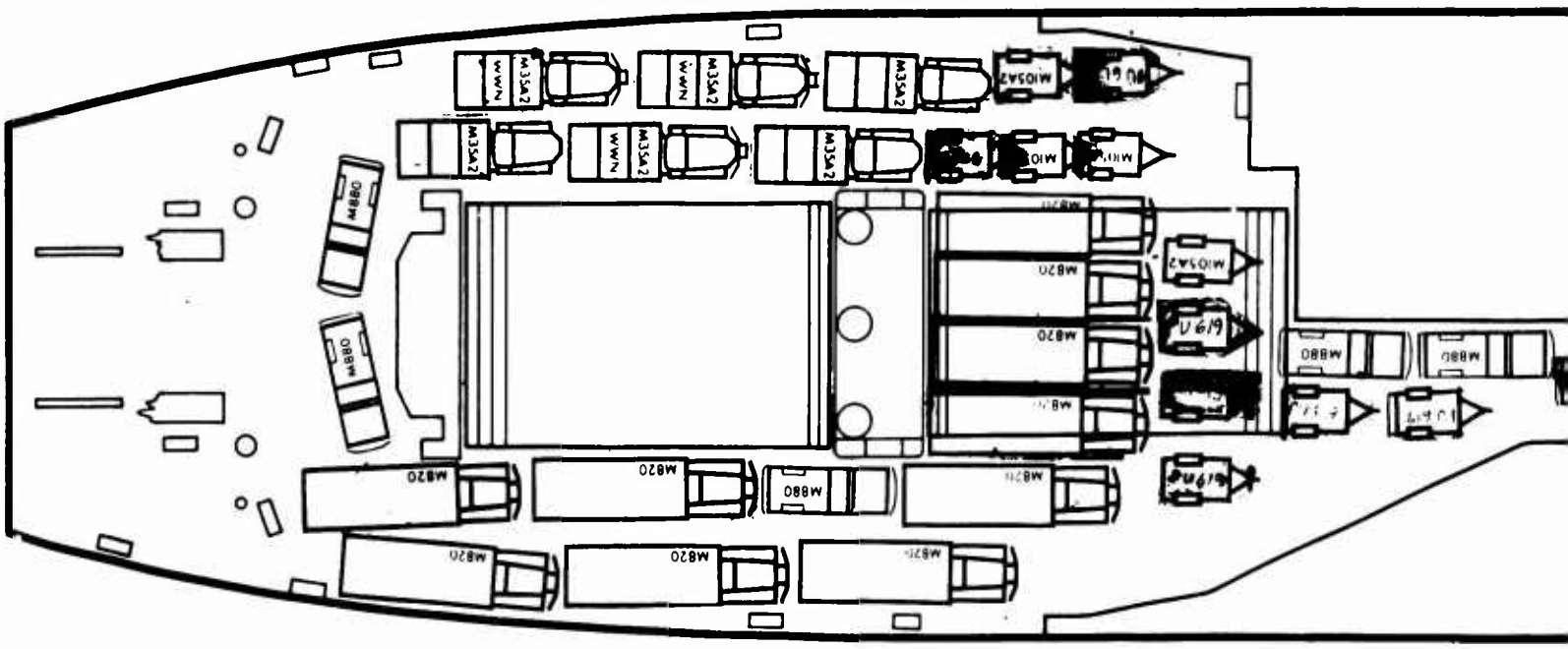
SECTION III TO ANNEX A

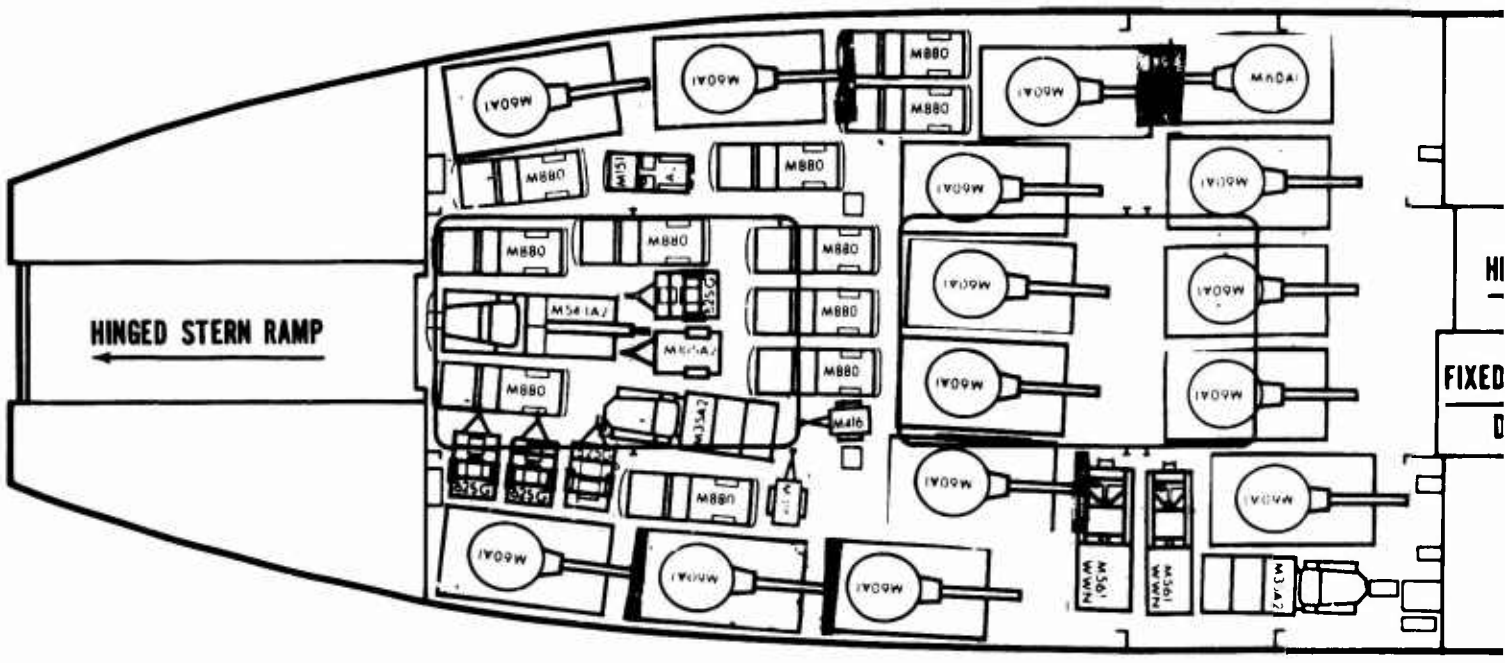
USNS METEOR
Total Cargo Loaded: 3,924 LTON; 14,995 MTON

Space Utilization	Capacity (Sq Ft)	Cargo Space Used (Sq Ft)	Percent Filled
Main Deck			
1	1,700	48.6	2.9
2	2,710	2,205.8	81.4
3	7,340	4,892.6	66.7
4	7,760	6,067.6	78.2
Shelter Deck			
1	2,320	1,943.6	83.8
2	3,420	2,502.5	73.2
Upper Tween Deck			
1	1,670	1,283.9	76.9
2	2,960	2,497.4	84.4
3	10,600	8,167.9	77.1
4	10,400	7,734.5	74.4
Lower Tween Deck			
1	930	882.7	94.9
2	2,320	1,579.4	68.1
3	9,550	6,443.7	67.5
4	9,060	6,653.3	77.0
Upper Hold			
2	1,960	1,610.9	82.2
3	9,180	7,352.7	80.1
Lower Hold			
3	8,350	5,710.8	68.4
4	7,040	4,842.1	64.2

Summary

Ship capacity	99,270 sq ft
Total cargo	72,420 sq ft
Ship utilization	73%

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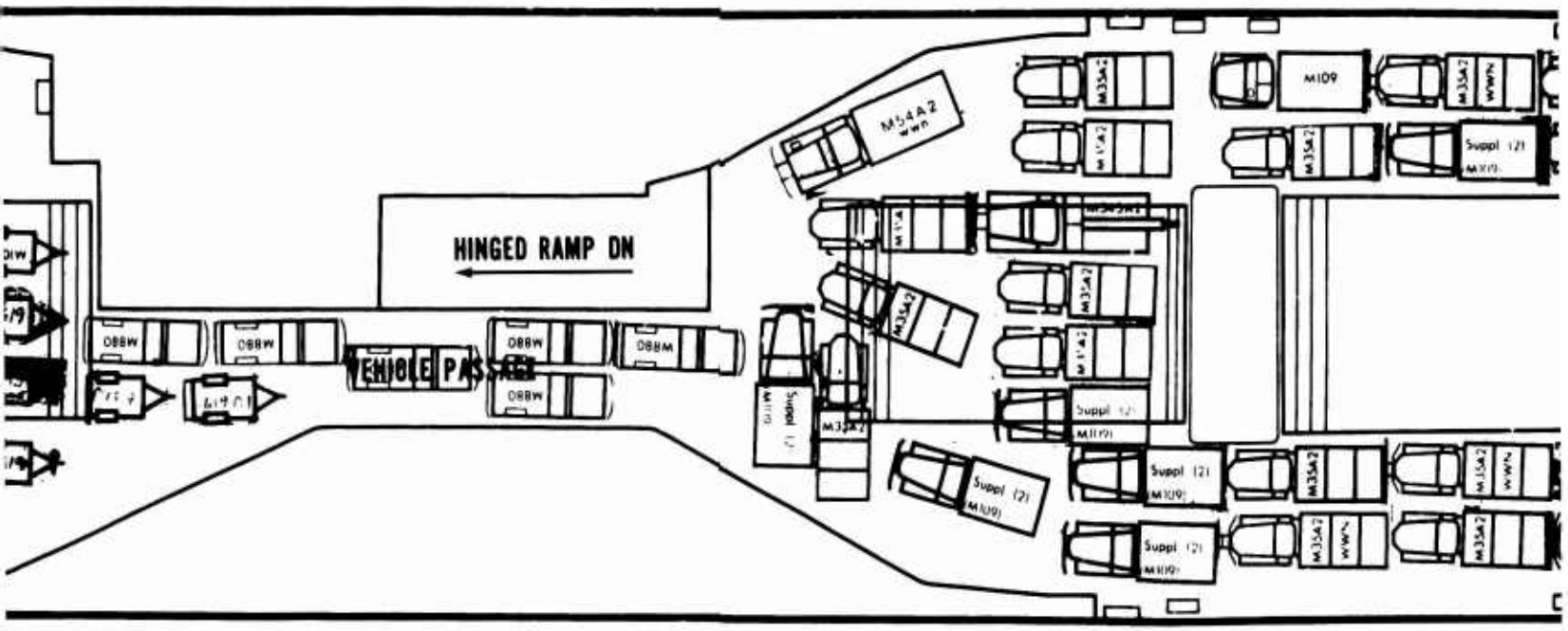
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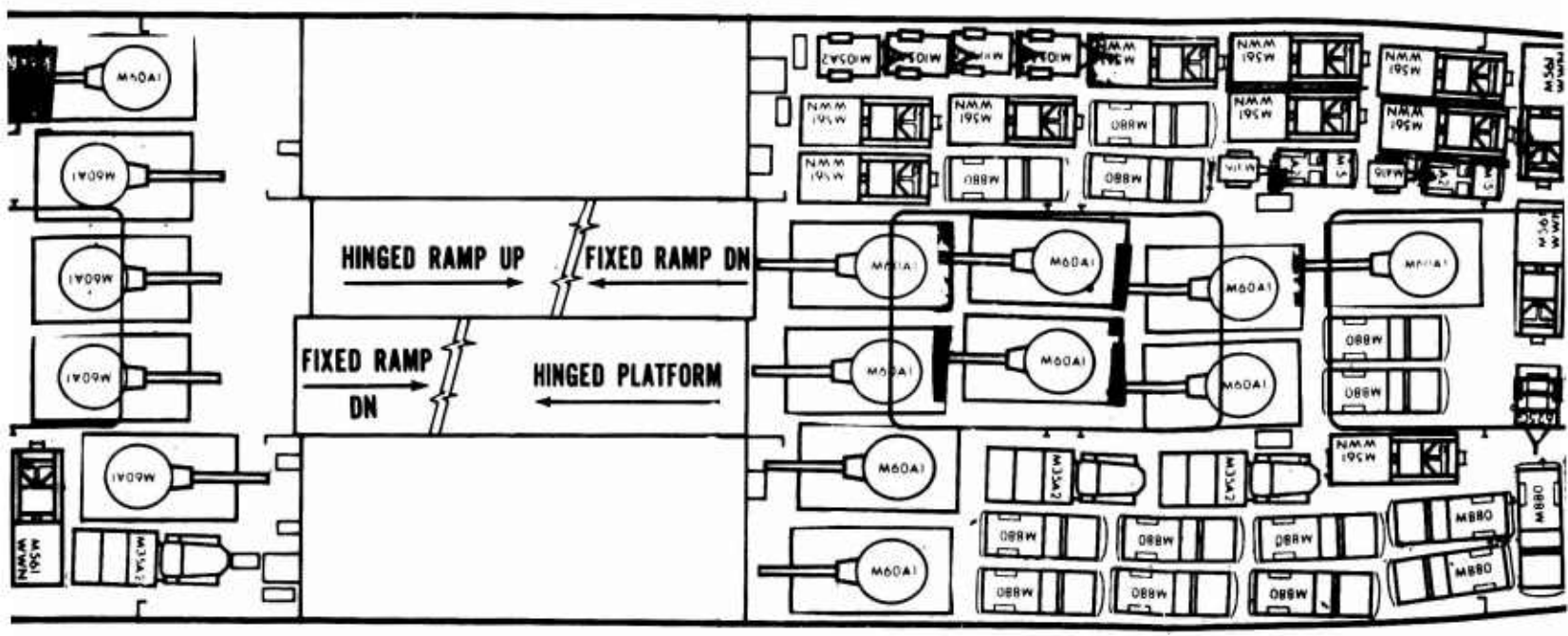
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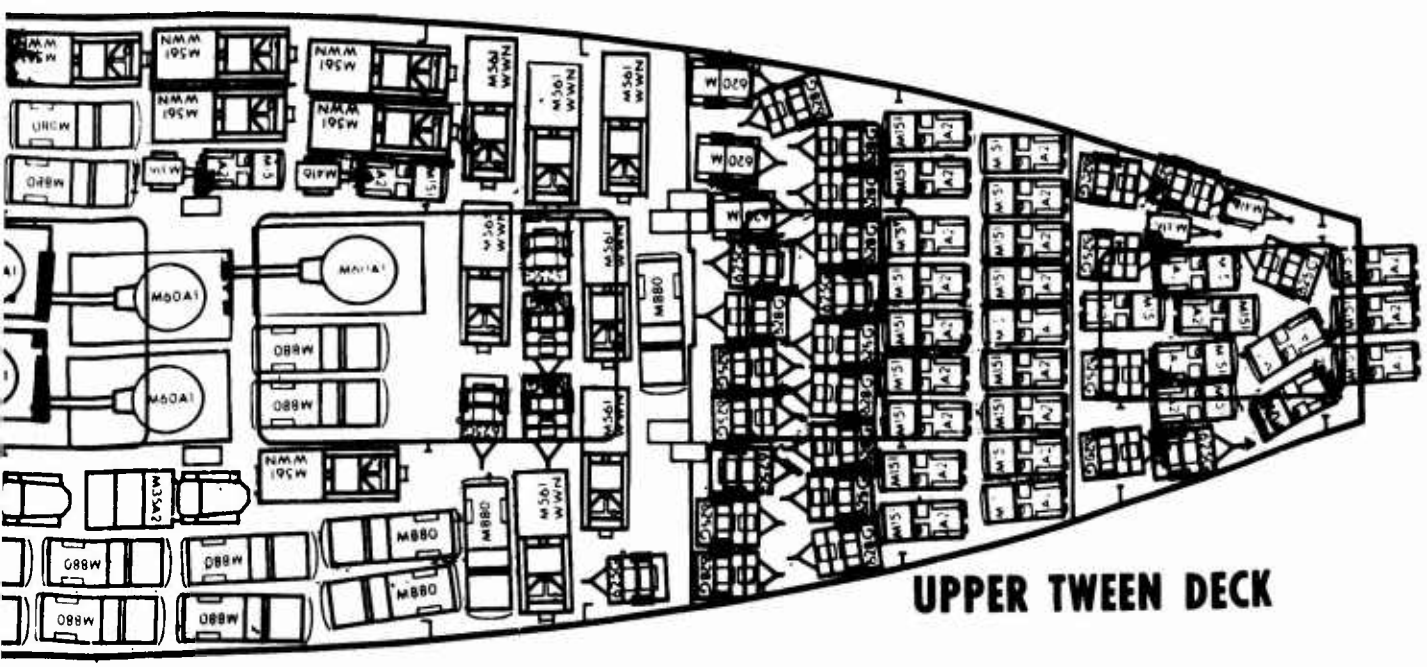
M60A1

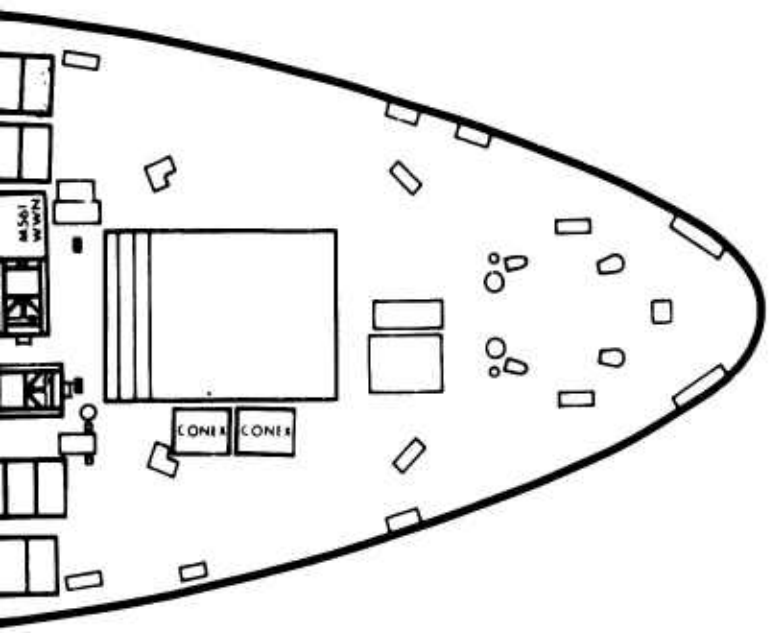
MAIN DECK



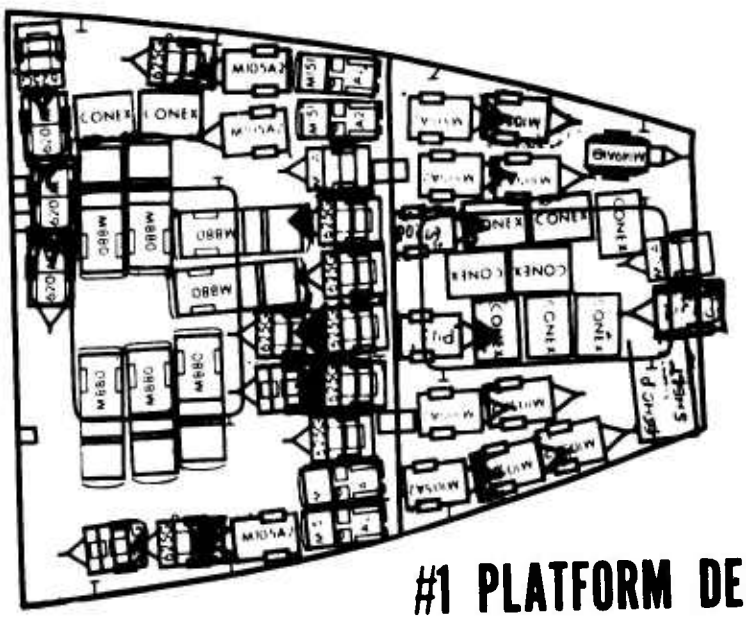
UPPER TWEEN DECK

#2

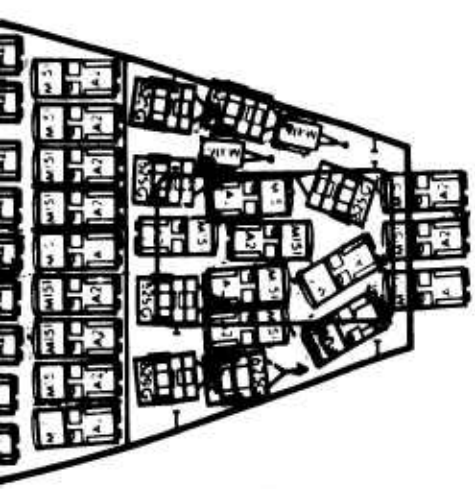
TEMPLATE
FINAL STOW
19 DEC 1978
USNS METEOR



AIN DECK

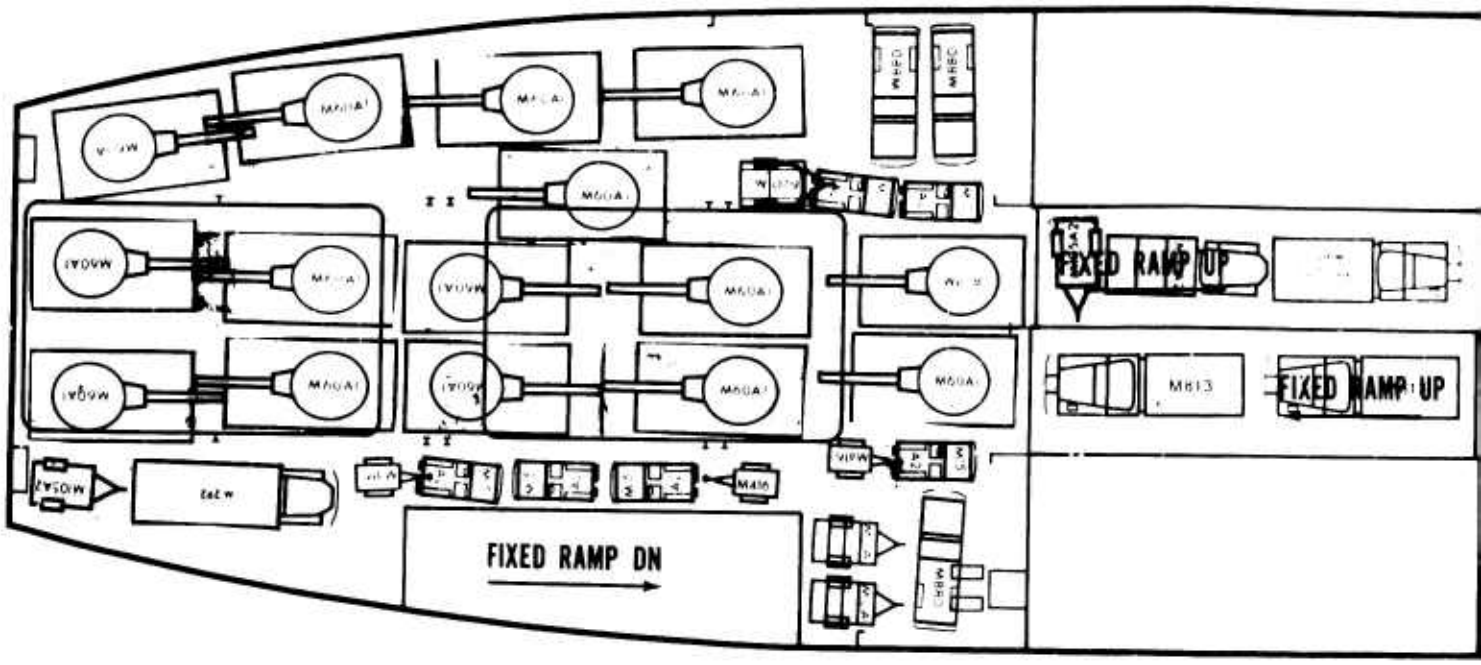


#1 PLATFORM DECK



#2 PLATFORM DECK

PPER TWEEN DECK



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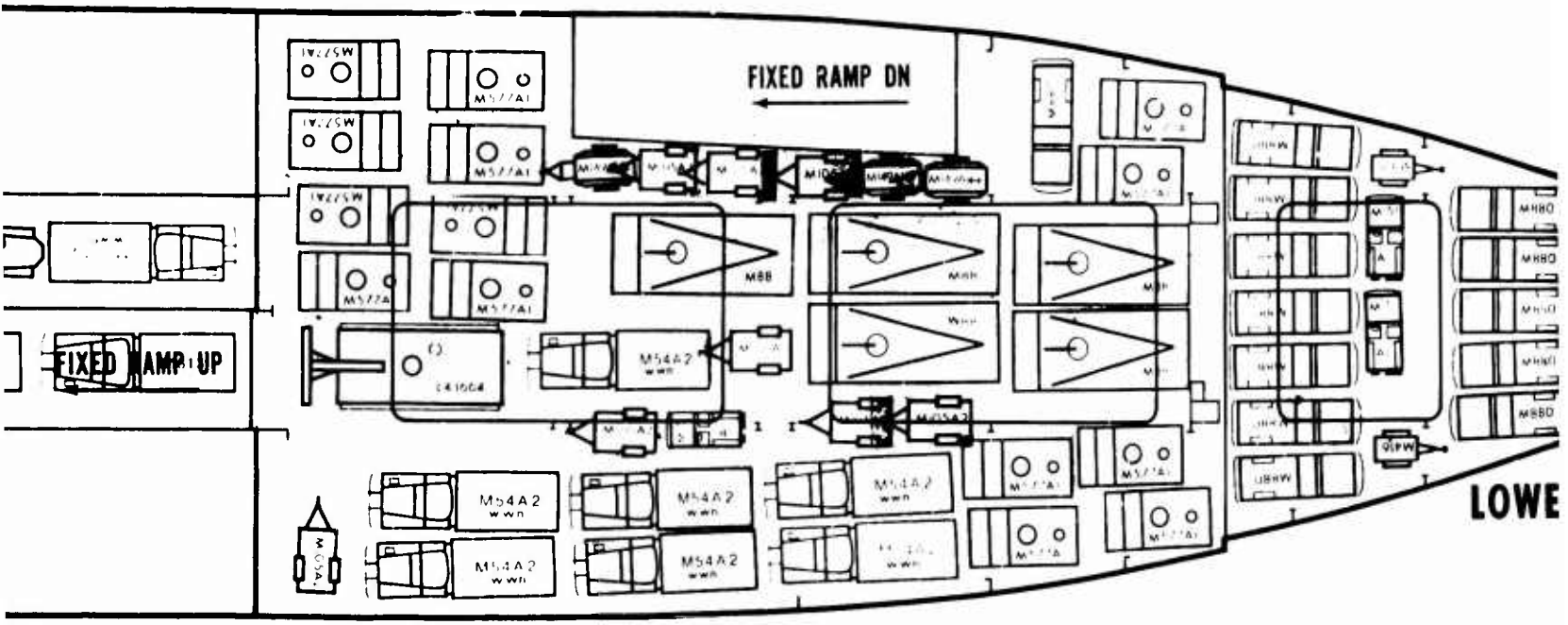
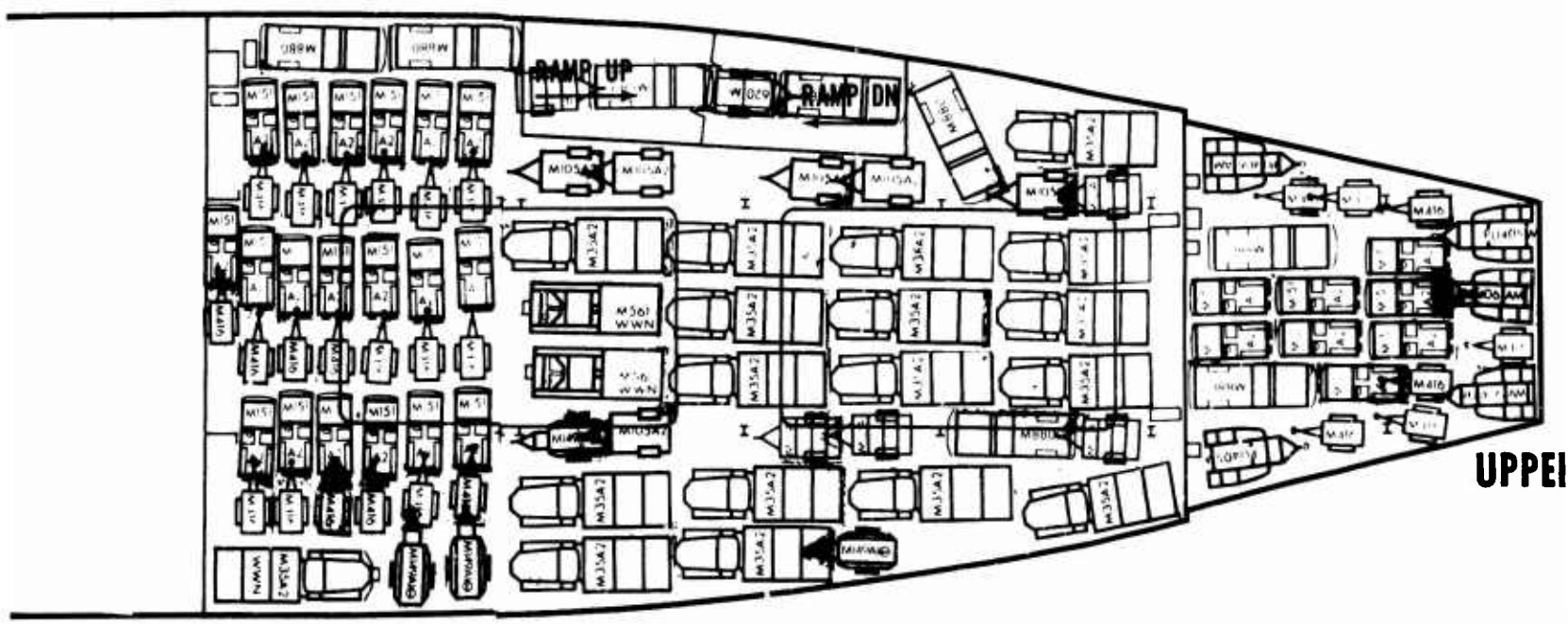
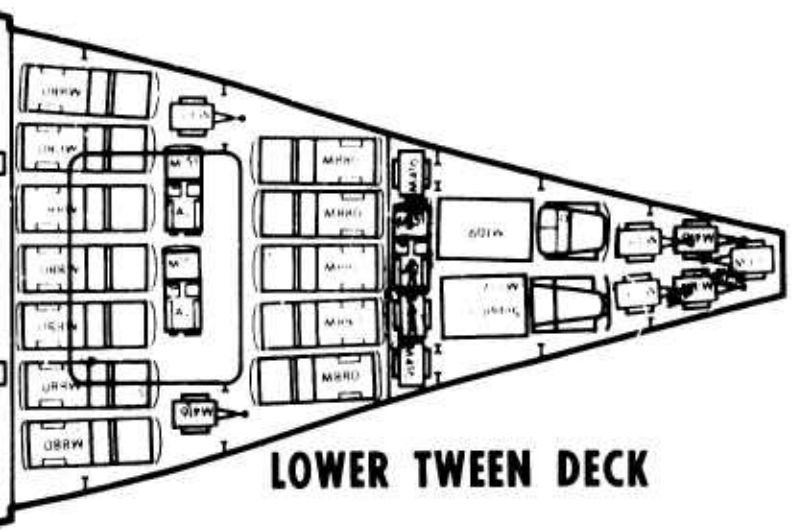
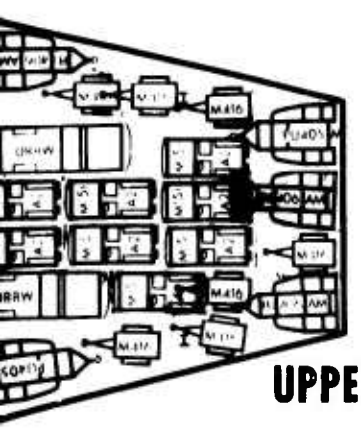




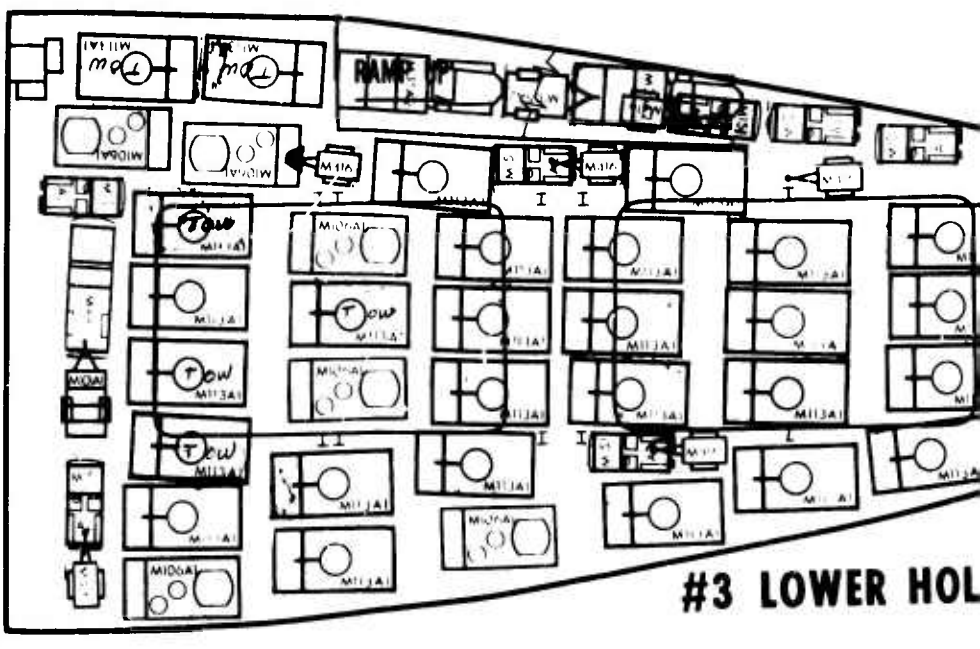
USNS METEOR



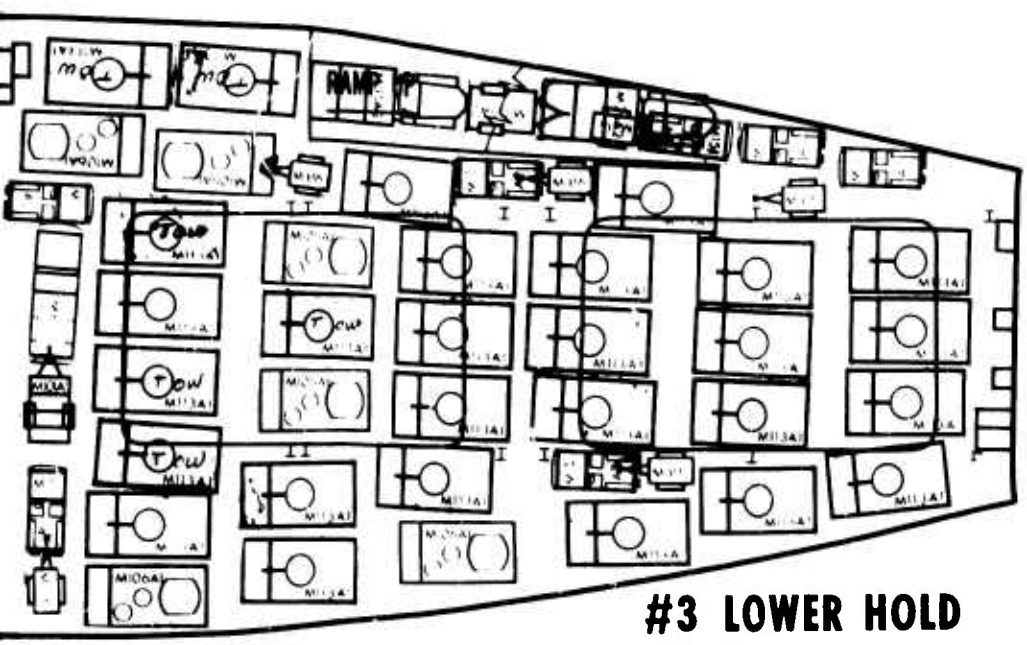
LOWER TWEEN DECK



UPPER HOLD



#3 LOWER HOL



#3 LOWER HOLD

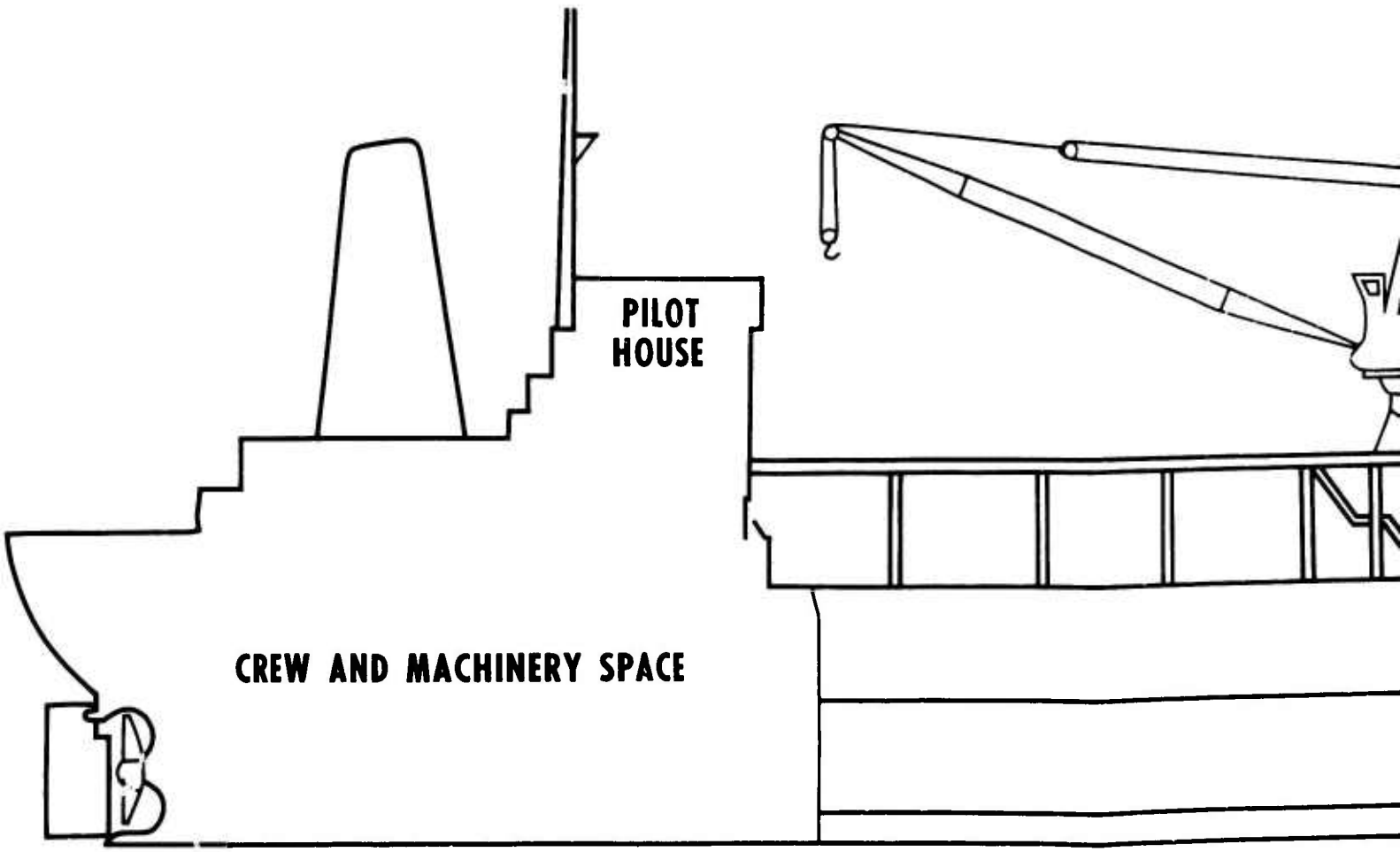
SECTION IV TO ANNEX A

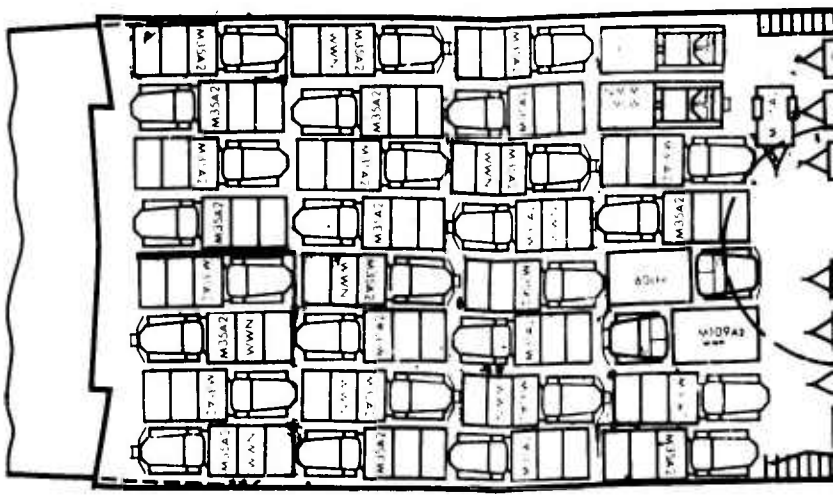
SS MAINE
Total Cargo Loaded: 3,587 LTON; 11,403 MTON

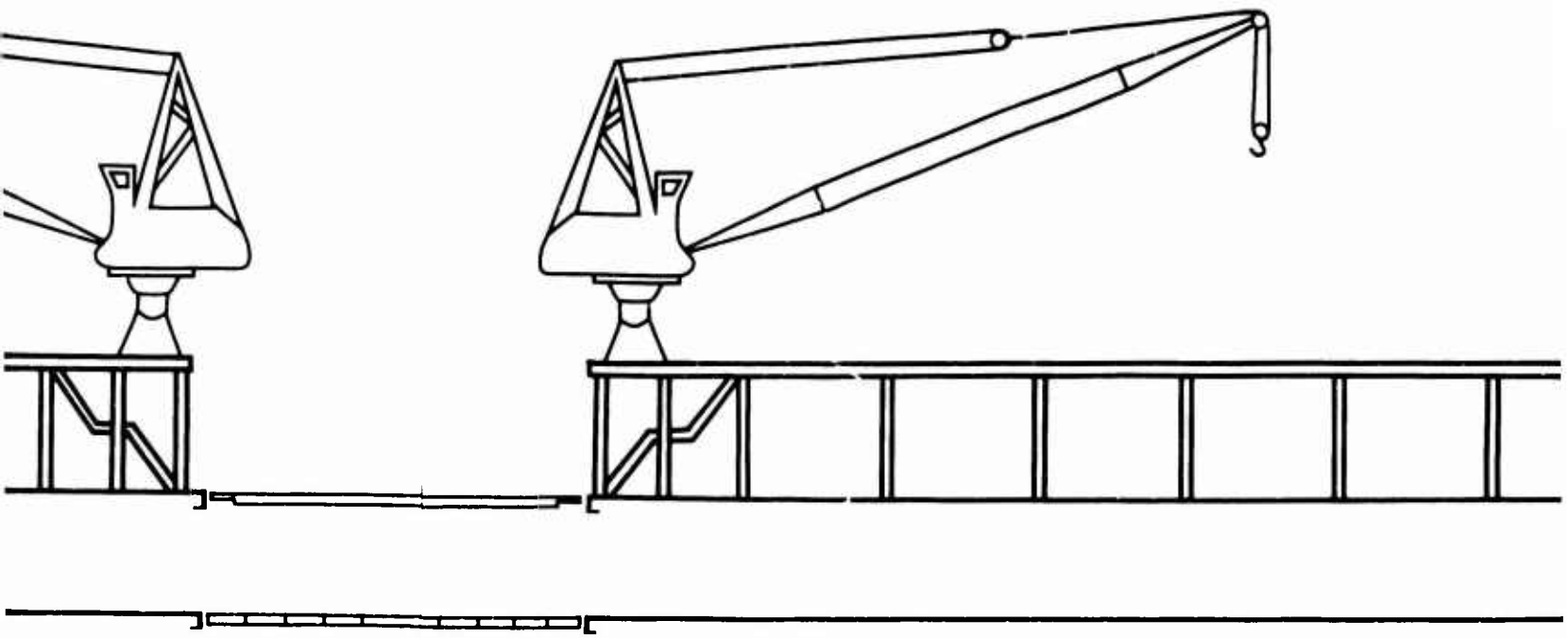
Space Utilization	Capacity (Sq Ft)	Cargo Space Used (Sq Ft)	Percent Filled
Spar Deck	19,212	16,523.8	86.0
Main Deck	20,?10	17,524.8	75.4
Tween Deck	12,775	9,598.8	75.1
Lower Hold	12,760	11,589.6	90.8

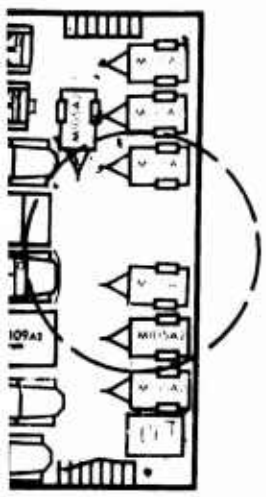
Summary

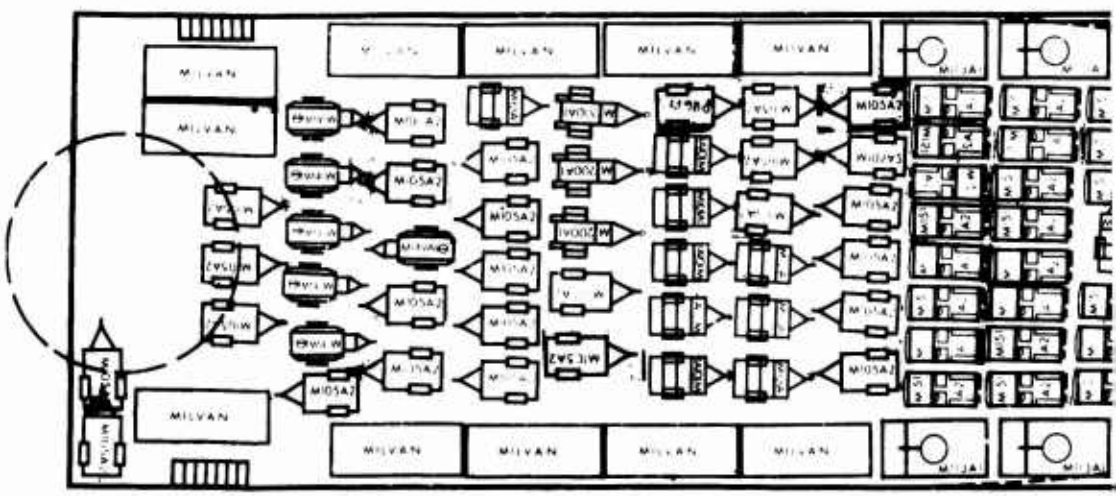
Ship capacity	67,997 sq ft
Total cargo	55,237 sq ft
Ship utilization	81.2%


PILOT
HOUSE
CREW AND MACHINERY SPACE





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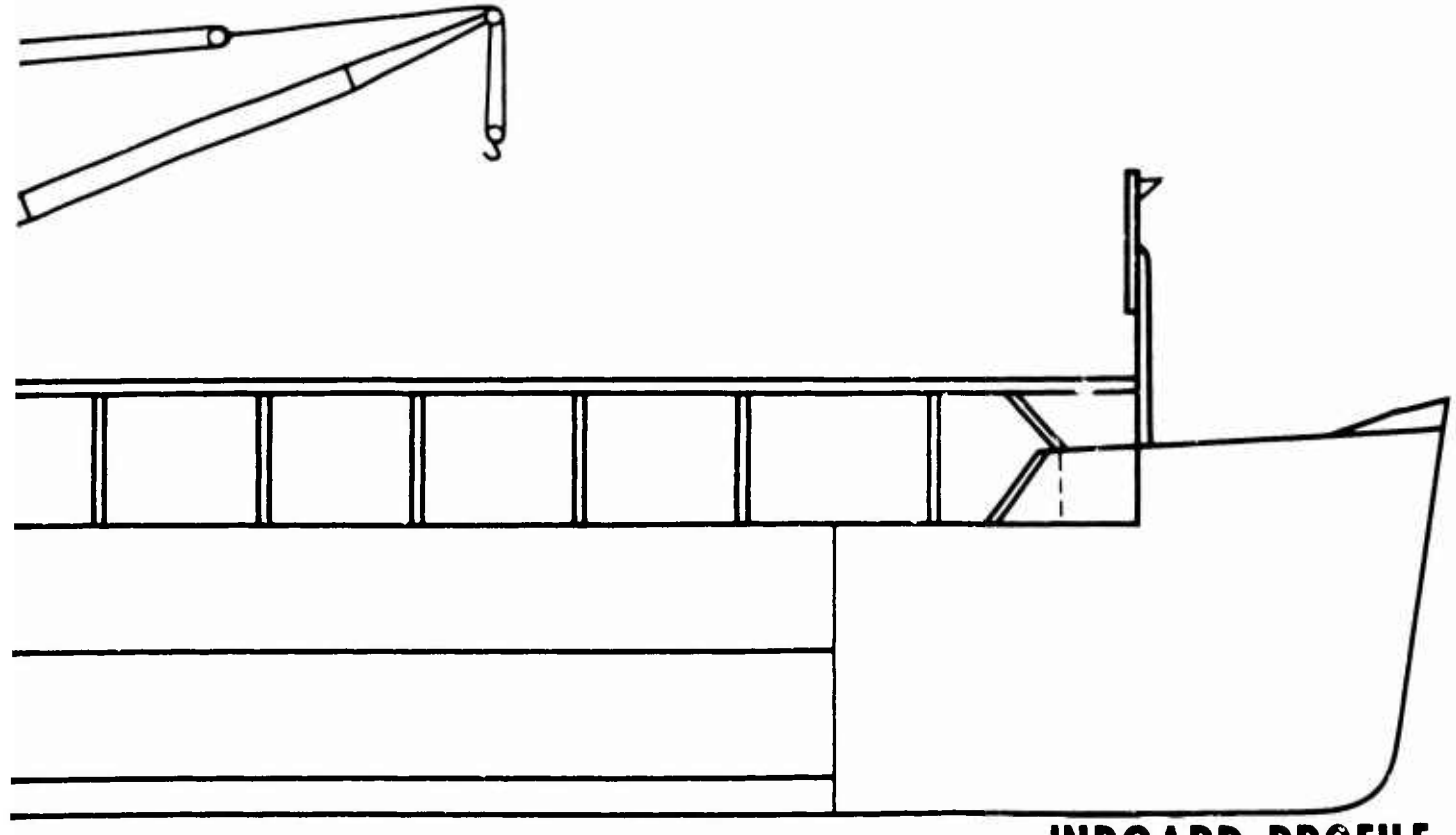
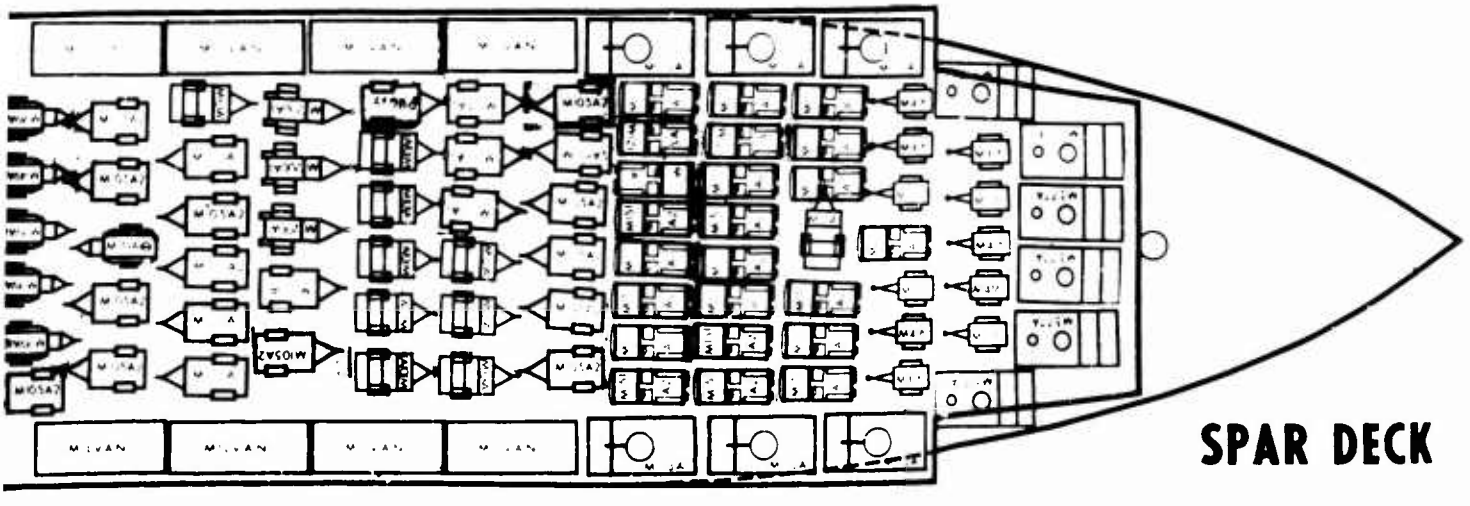
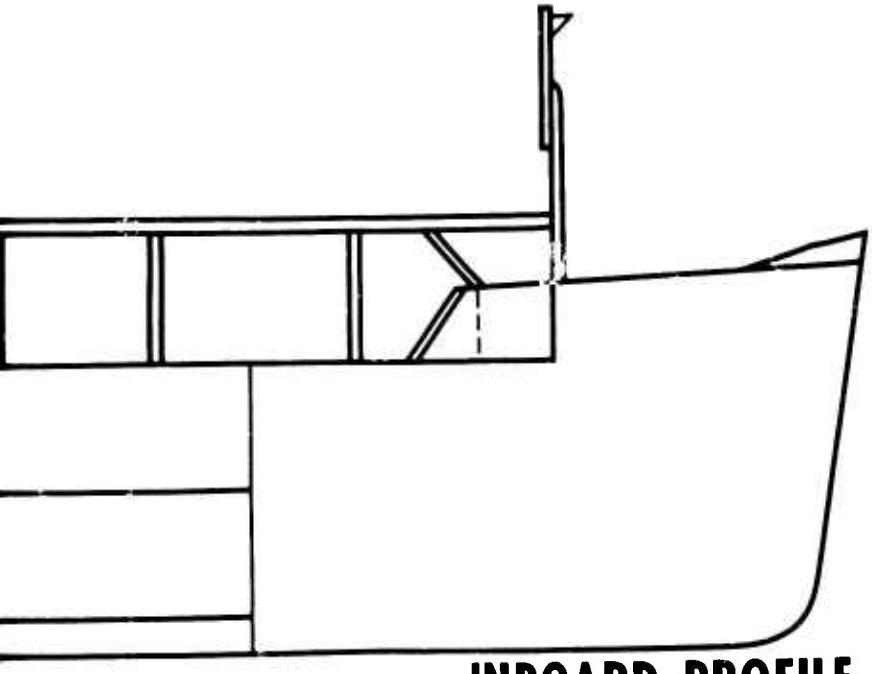


INBOARD PROFILE

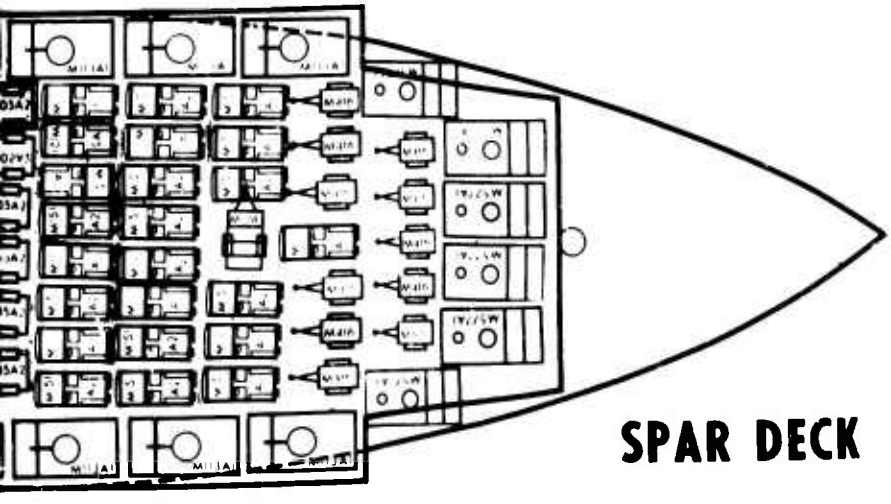


SPAR DECK

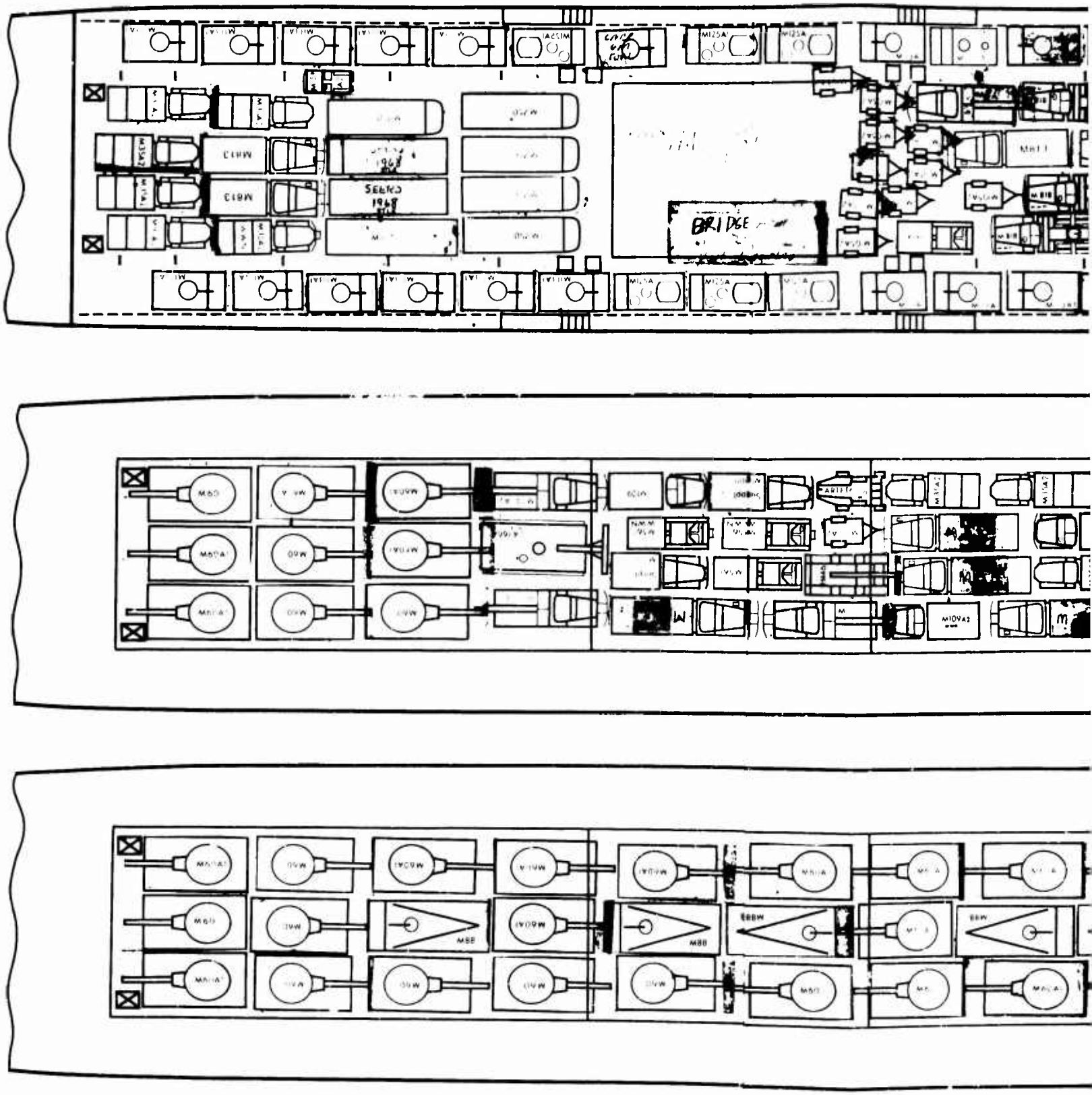
TEMPLATE
FINAL STOW
21 DEC 1978
S. S. MAINE



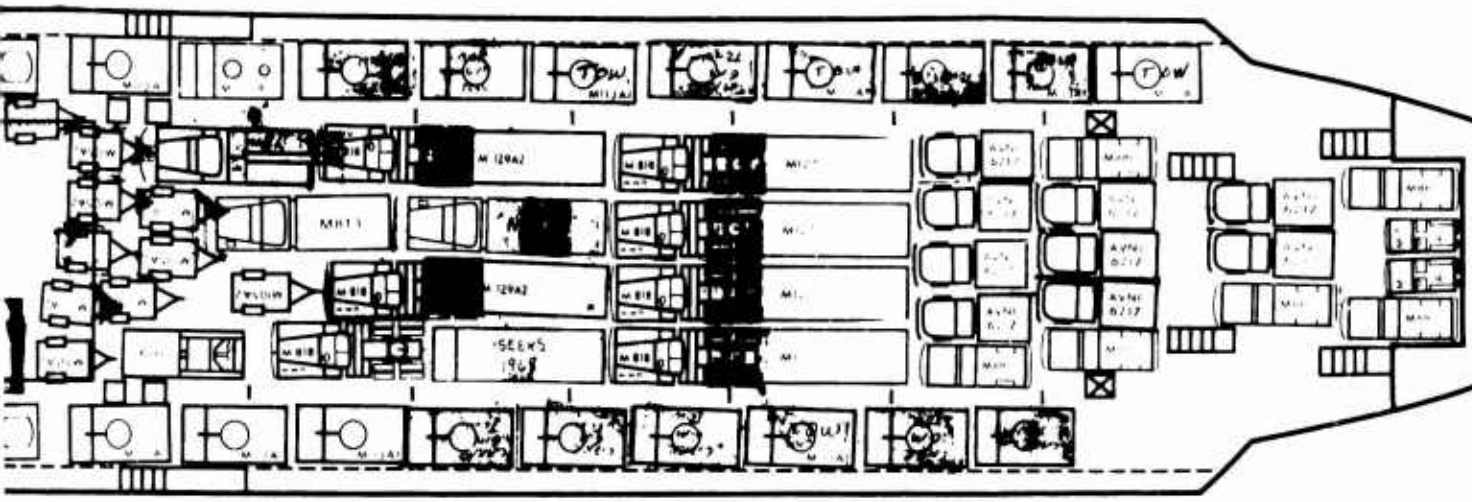
INBOARD PROFILE



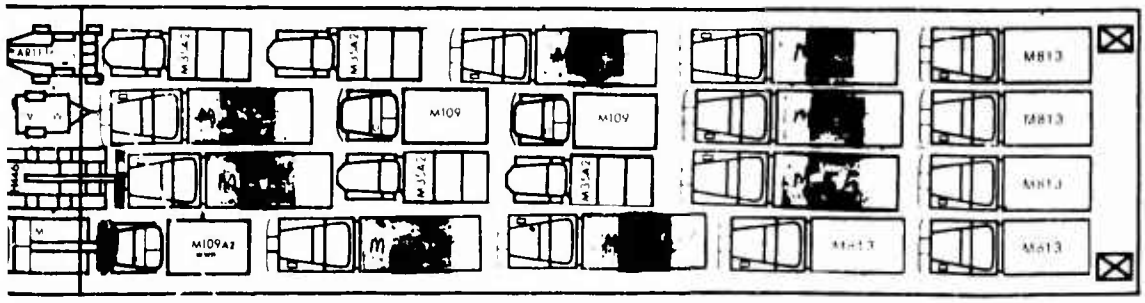
SPAR DECK



S. S. MAINE



MAIN DI



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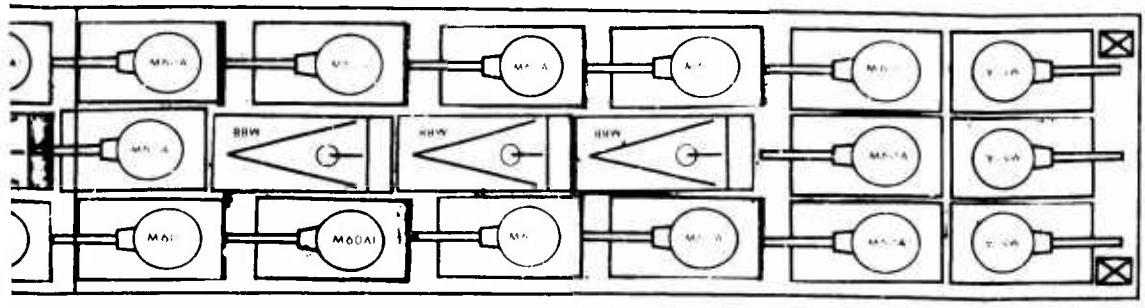

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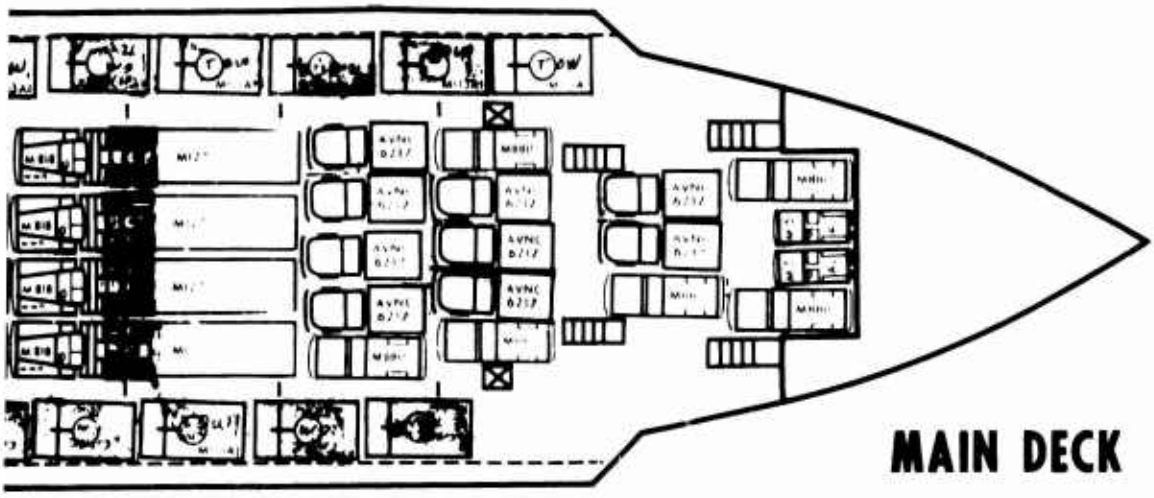
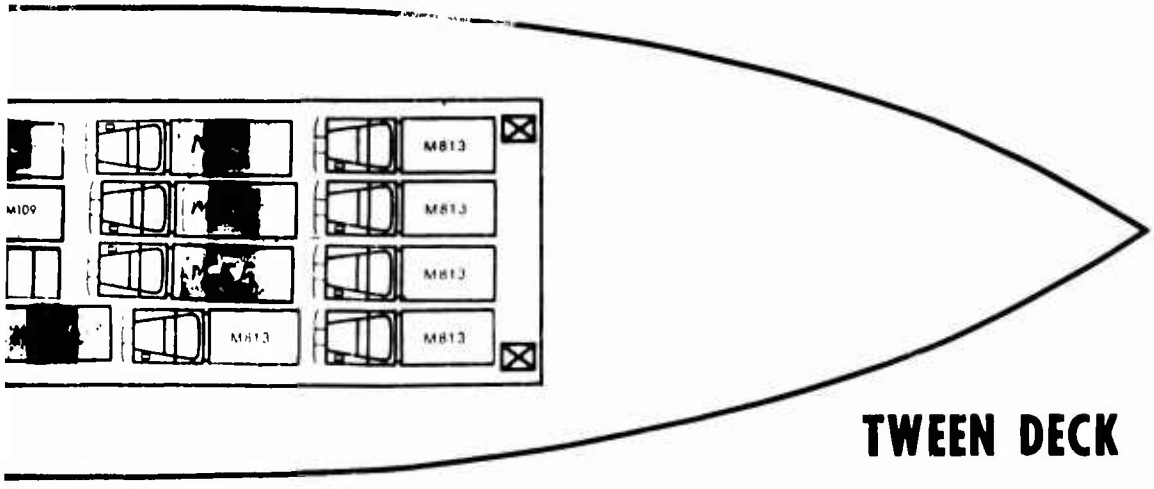
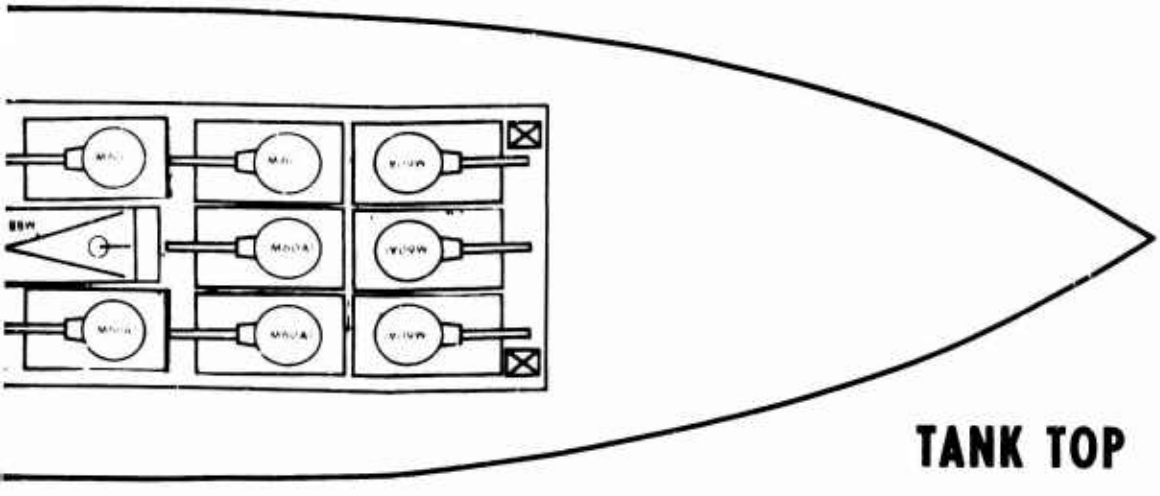
S. S. MAINE



MAIN DECK



TWEEN DECK



TANK TOP

ASSOCIATION OF
AMERICAN RAILROADS
OPERATIONS AND MAINTENANCE DEPARTMENT • MECHANICAL DIVISION
RICAN RAILROADS BUILDING • WASHINGTON, D. C. 20036 • (202) 293-4150

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F. A. DA
Executive Dire

R. ...
Secret

January 2, 1979

SUBJECT: Emergency Securement of Tanks Loaded to Tank Figures, Section No. 6 - United States Readiness Command

REFER TO FILE NO. LR-11.0

TO SUBCOMMITTEE GROUP "F"

Messrs. M. Pavlica, Chairman
L. O. Dale, Vice Chairman
J. H. Allen
R. E. Walkup
J. W. Brunner

Gentlemen:

Please refer to all previous correspondence in regard to the above subject heading.

Attached for your review, is report furnished this office by Loading Inspector R. F. Martin covering test shipment of 32 loaded cars and their performance from Fort Hood, Texas to Beaumont, Texas.

This matter will be further discussed at the February meeting in Chicago at which time Mr. Paus will have available additional data on chock dimensions and other details.

Yours very truly,

Leo Myers

Manager, AAR Loading Rules

LPM/J'net

Attachment

CC: Mr. A. H. Blanken, Chairman
Balance Open Top Loading Rules Committee

Mr. F. L. Paus
DOD Representative

SUBJECT: Emergency Securement of Tanks Loaded to Tank Figures, Section No. 6 - United States Readiness Command.

File No. LR-11.0.57

DECEMBER 9, 1978

Arrived at the loading site Fort Hood, Texas, at 2:00 PM with Frank Paus. The equipment had been loaded and was in the process of being inspected by the ATSF inspectors. There were 32 loads of tracked equipment, 30 of which were tied-down in the following manner: 4 steel chock blocks were placed under each end of tread, these were a mixture of various sizes. Even though all performed well, the proper sizes to be used with the individual vehicles will be shown on specifications from Frank Paus. Four (4) 1¼" in. turnbuckles per each vehicle were used in line with one loop of 5/8 in. cable from turnbuckle to tank tie-down brackets and one loop from turnbuckle to stake pockets, each secured with 4 clips. Complete assemblies were applied in a crossed position and turnbuckles were wired to prevent loosening. Thimbles were used at stake pockets but not at tank tie-down brackets. Mr. Paus and I spent until 6:00 PM checking the tie-downs and chalk marking the treads and chock blocks on the two loads not tied down. The remaining 2 cars had three (3) M-60 tanks, weighing 103,000 lbs. apiece, loaded in the following manner: Six (6) pattern 75 steel side chock blocks were applied to each tank as well as the four (4) steel chock blocks under the tread, the size of which will be furnished by Mr. Paus. Cables and turnbuckles were applied, but left in a loose condition, in the event shifting would be experienced during transit and securement would be needed.

DECEMBER 10, 1978

Arrived at the loading site at 7:15 AM. The Santa Fe provided a caboose for us, which would be placed as the 27th car in the train. Riding in the cab with Mr. Paus and I were Lt. Col. Taylor, U.S.A.F. and H. E. Richardson, Asst. to the General Car Foreman, Santa Fe. Our train consisted of 70 loads and 2 cabs, the other cab being for guards, total 6,196 tons. The two loads of unsecured tanks were placed directly in front of our cab as the 25th and 26th cars. The road units arrived at 8:10 AM and coupled to the first track at 8:15 AM. After five (5) doubles were made, we coupled to the road cab, made an air test and departed Fort Hood at 9:55 AM. We proceeded to Belton, Texas, arriving at 10:40 AM and took the siding to meet two west bound freights. We checked the two cars ahead of the cab and found one (1) end chock block shifted diagonally 1 inch due to nails being applied along side through cracks in the car deck. It was resecured with one used nail, and we proceeded on to Beaumont without any problem. We departed Belton at 10:52 AM and arrived Temple, Texas at 11:17 AM. Checked loads again and took no exceptions. After crew change and servicing of cabs, we departed at 12:15 PM. We proceeded on to Somerville, Texas without stopping, arriving at 2:22 PM. We checked as many of the head end cars as possible, found no evidence of any shifting, before departing at 2:40 PM.

We did not stop again until arriving at Silsbee, Texas at 8:00 PM. Our train was yarded and a new crew was called for 10:00 PM. We checked the train again and took no exceptions. Mr. Richardson left us here to return to Temple. He was very pleased with the performance of the loads. Beaumont is only 22 miles from Silsbee. Our new crew coupled to the train at 10:18 PM and after the air test, started to pull at 10:31 PM. At 10:33 PM, moving at approximately 4 MPH, the air went into emergency. The second, third and fourth cars behind the engine derailed. Several rails were spread and turned over. All cars remained upright and no shifting was noted on the loads. The road units cut off and a yard engine pulled the rear of the train back to the other end of the yard. The road engine was recoupled and we departed Silsbee again at 11:32 PM. We arrived in the yard at Beaumont at 1:15 AM. A yard engine coupled to the head end of the train and moved the head 26 cars and our cab to the Port of Beaumont. We departed for our motel at 2:30 AM.

DECEMBER 11, 1978

At 7:00 AM, Mr. Paus and I went to the port to inspect the vehicles before they were unloaded. Of the 48 inspected, none were found to have any lateral or longitudinal shift. All tie-down components were intact and snug. None of the cables at the tie-down brackets, on the tanks, where thimbles were not used, were frayed. Only two steel chock blocks showed evidence of moving, and this was due to poor nailing. During the trip, several impacts occurred; once during switching at Fort Hood and again when we derailed at Silsbee and went into emergency. Slack action occurred during the entire trip as the Santa Fe line follows the contour of the land. Speeds over 50 mph were reached, along with low spots in the track, which caused rocking. When Mr. Richardson left us, he was well pleased with the outcome of the trip. This was the third of five trains and the first to carry heavy equipment. Train number four will be inspected by Mr. Paus upon arrival at Beaumont and a report will be forthcoming. Mr. Paus stated that the D.O.D. does not wish to ship tanks without securement like the two test cars, but all agreed that in a national emergency, with proper supervision of loading, this concept would work. As to the rest of the loads in this train and the two to follow, if they all perform like the ones inspected, there should be no reason why tanks could not be handled in controlled movements like this. When this training exercise is over and tanks are returned, all will be loaded using the cable and turnbuckles. Below, is a list of cars and equipment with weights.

DODX	38555	1	M-88	Tank Retriever	107,000 lbs.
DODX	38628	1	M-88		
DODX	38579	1	M-88		
DODX	38575	1	M-88		
DODX	38625	1	M-88		
DODX	38550	1	M-88		
DODX	38301	1	M-88		
DODX	38328	1	AV	Bridge Launcher	89,000 lbs.
DODX	38123	2	M-60	Tanks	103,000 lbs. apiece
DODX	38323	2	M-60		
DODX	38124	2	M-60		
DODX	38621	2	M-60		
DODX	38607	2	M-60		
DODX	38324	2	M-60		

(list of cars and equipment with weights, continued from previous page)

DODX	38632	2	M-60	
DODX	38612	2	M-60	
DODX	38062	2	M-60	
DODX	38337	2	M-60	
DODX	38586	2	M-60	
DODX	38627	2	M-60	
DODX	38146	2	M-60	
DODX	38571	2	M-60	
DODX	38570	2	M-60	
DODX	38066	2	M-60	
DODX	38130	2	M-60	
DODX	38136	2	M-60	
DODX	38060	1	M-88	Left at Silsbee in derailment.
DODX	38334	1	M-88	"
DODX	38319	1	M-88	"
DODX	38609	1	M-88	"

ALL CARS ABOVE USED CABLE AND TURNBUCKLES

DODX	38557	1	M-60	1 D-7 "CAT" secure with cable.
DODX	38122	2	M-60	

THREE (3) M-60, ABOVE WERE NOT SECURED TO CAR.

Respectfully submitted,

R. F. Martin

MTT-TRP JAN 16, 1979

COPY

Mr. Leo P. Myers
Manager, AAR Loading
Association of American Railroads
American Railroad Building
1520 L Street N. W.
Washington, DC 20036

Dear Mr. Myers,

Reference your letter 7 December 1978, file LR-11.0.57.

During the period 10 to 15 December 1978, one hundred fourteen M60 tanks (103,000 pounds), seventeen M88 tank recovery vehicles (107,000 pounds), and three AVL bridge launchers (89,000 pounds) were shipped in five unit trains from Fort Hood, Texas to Beaumont, Texas, a distance of approximately 300 miles. All of the above vehicles were shipped on DODX heavy duty flatcars using the securement method tested at Aberdeen Proving Ground, Maryland, that is, metal chock blocks (comparable to patterns 74 and 76) in front and rear of tank treads, 1-1/4-inch turnbuckles and 5/8-inch, 6x19 IWRC wire rope for tiedowns. The tiedowns were applied in a crosswise configuration. No "H" frame or bogie chocks were used. Wire rope (5/8-inch) loops were used in lieu of 1-1/4-inch shackles since none of the vehicles were equipped with shackles and they were not available at Fort Hood. Additionally, three tanks loaded on DODX cars were secured using only metal chock blocks and metal side cleats (pattern 75). Turnbuckles with wire rope were attached, very loosely, for the purpose of having them available, if required.

All vehicles arrived in good order with little or no movement either laterally or longitudinally. The three tanks restrained with only chock blocks and cleats had a longitudinal movement of less than 1/4-inch.

Mr. Ray Martin, AAR, Mr. H. E. Richardson, Assistant General Car Foreman AT&SFe, and the undersigned accompanied train # 3, which carried 39 tanks under the proposed method, and the 3 tanks secured only with blocks.

Based upon the above over-the-road test shipments, request that the proposal for the movement of tanks and similar equipment as outlined under file LR-11.0.57 be approved for movement in unit trains (controlled moves)

during readiness exercises and/or emergencies. Although not specified in original request, it is desired that in line with general rule 8c, consideration be given to allowing a 12 inch overhang of the end sill by the gun barrel on tank # 2. This will allow for a better tiedown angle at the front of tank # 1.

Request that the movement of tanks without tiedowns be deferred at this time as a method of shipment, even though the test shipments arrived at destination without incident. Shipments made with this method of securement must be closely supervised and the expertise required is not always readily available.

Twenty-five copies of loading drawings and specifications are being forwarded under separate cover for distribution to the Loading Rules Committee members. It is desired that this proposal, when approved, be entered in Section 6 as figure 80-A.

Sincerely yours,

Frank L. Paus
DOD-AAR Representative

ASSOCIATION OF
AMERICAN RAILROADS
OPERATIONS AND MAINTENANCE DEPARTMENT • MECHANICAL DIVISION
AMERICAN RAILROADS BUILDING • WASHINGTON D C 20036 • (202) 293-4150

N L ANTLE
Director Rules & Inspection

R J THELEN
Director Technical Committees

February 22, 1979

Subject: Emergency Securement of Tanks Loaded to Tank Figures, Section No. 6 - United States Readiness Command

Mr. Frank L. Paus
DOD-AAR Representative
Department of the Army
HQMC-TEA
12388 Warwick Boulevard-P. O. Box 6276
Newport News, VA 23606

FILE NO. LR-11.0.57

Dear Mr. Paus:

Please refer to your letter of January 16, 1979, in regard to the above subject heading.

This matter was further discussed at a meeting of the Open Top Loading Rules Committee held February 13, 14, 15, 1979. Shown below is the action taken as recorded in the minutes.

The Committee heard report on performance of test run on 42 cars loaded with tanks and/or similar equipment shipped from Fort Hood to Beaumont, Texas, and approved proposed new Fig. 80-A for inclusion into the manual with heading "TANKS AND SIMILAR UNITS MOVING IN CONTROLLED TRAIN SERVICE FOR UNIT MOVES AND/OR EMERGENCIES - FLAT CARS". Referred to Rules and Figures Subcommittee Group "A" for finalizing. Docket closed.

This proposal will be finalized at the next meeting of the Rules and Figures Subcommittee, scheduled to be held March 20, 21 and 22, 1979. If a circular letter is desired following that meeting, please advise.

Yours very truly,

N L Antle

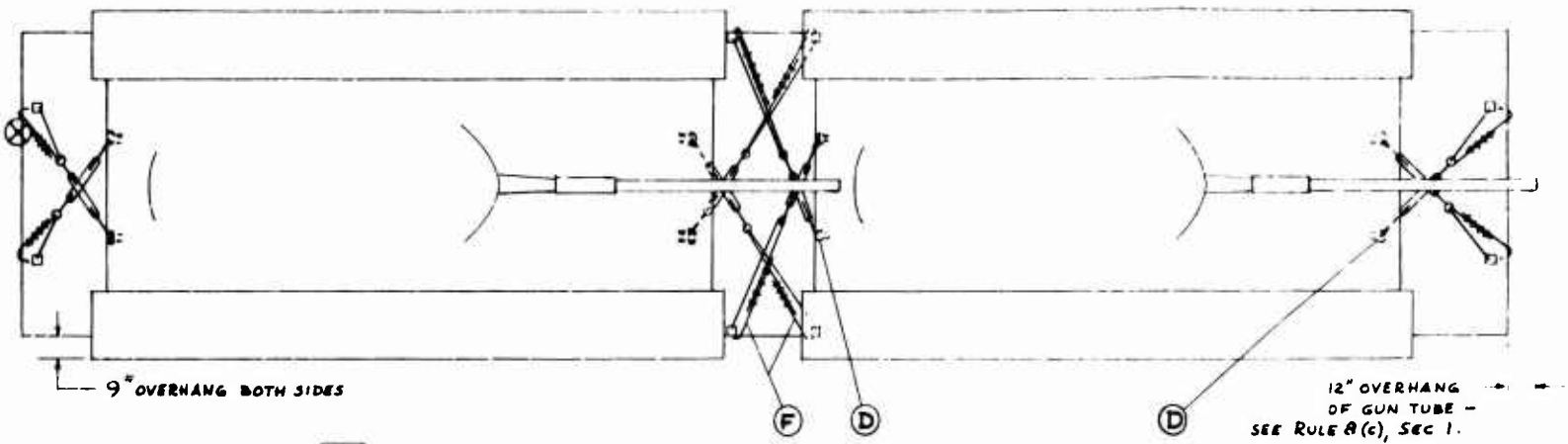
Director, Rules and Inspection

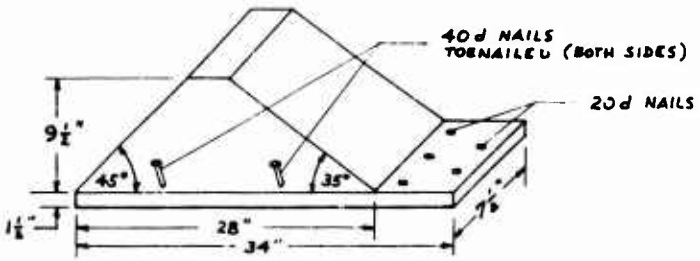
NLA/LPM/sh

cc: Mr. A. H. Blanken, Chairman
Balance Open Top Loading Rules Committee

SEC. 6 – FIG. 90-A

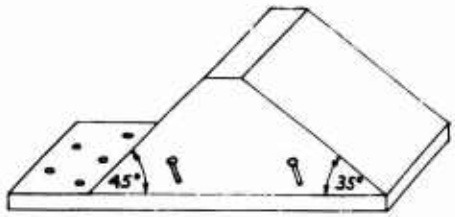
TANKS AND SIMILAR UNITS MOVING IN CONTROLLED TRAIN SERVICE FOR UNIT MOVES AND/OR EMERGENCIES - FLAT CARS





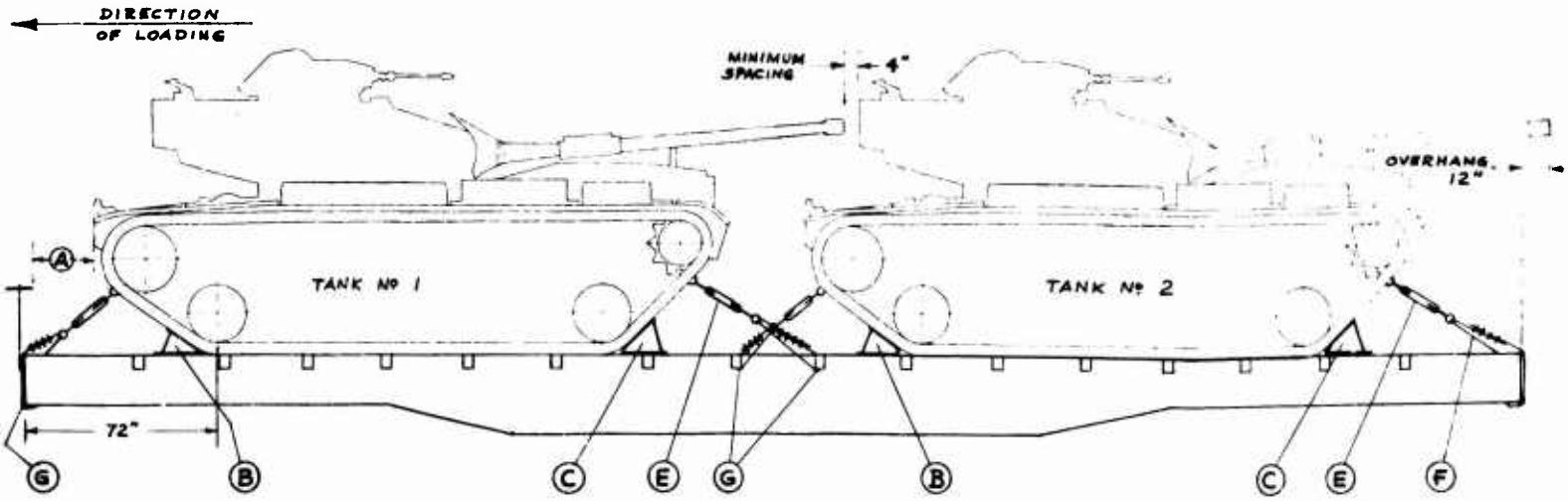
SKETCH 1

ALTERNATE WOOD CHOCK BLOCK



SKETCH 2

DIMENSIONS AND NAILS SAME AS SKETCH 1



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REPORT DOCUMENTATION PAGE

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7. AUTHOR(s): Gary R. Bill, LTC, TC; John T. Eanes, MAJ, TC; Michael S. Lach, CPT, TC; Max W. Nicely, CPT, TC; Dwain C. Denniston, CPT, TC
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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number): Analysis of MTMC Participation; Strategic Winter Deployment; REFORGER 79 Unit Equipment Deployment; Armor Division; Rail Loading; Cargo Documentation; Ship Loading, Ship Discharge; River Barges; Ship Prestow Planning

20. ABSTRACT (Continue on reverse side if necessary and identify by block number): This analysis documents MTMC participation in the REFORGER 79 exercise. It evaluates MTMC planning for and execution of its role in the surface deployment and redeployment of the military equipment of major elements of the 1st Infantry Division (Mech), the 1st Cavalry Division, and supporting units to Europe and return to home station. Subject areas covered include: pre-exercise staffing planning; shipload and prestow planning; unit port call and installation outloading, to include pre-exercise rail outloading training; CONUS line-haul operations; CONUS SPOE and SPOD operations; European SPOD and SPOE

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operations; cargo documentation procedures; and conclusions and recommendations. As in previous REFORGER exercises, REFORGER 79 demonstrated that the United States surface transportation system is capable of supporting major military unit deployments.